UNIVERSITY OF ALBERTA

# OPTIMAL METHOD OF ASSESSING DEPRESSION IN PATIENTS WITH CONGESTIVE HEART FAILURE

BY

ROSA C. GUTIERREZ ©

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF NURSING

FACULTY OF NURSING

EDMONTON, ALBERTA

FALL 1997

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**Degree:** Master of Nursing

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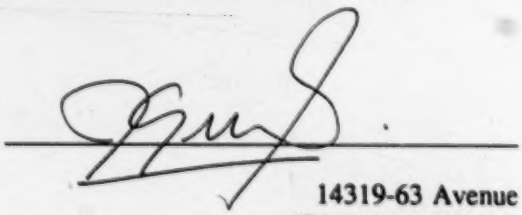

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## DEDICATION

This thesis is dedicated to my brother Mario who left us too soon.

## ABSTRACT

The objectives of this descriptive study were to assess ambulatory male and female patients with congestive heart failure for depression; to determine the prevalence and severity of depression; and to determine the optimal method of assessing depression. Twenty male and 20 female ambulatory subjects, randomly selected from a population of New York Heart Association classification group 2 and group 3 patients, were assessed for depression. Using the Beck Depression Inventory, the overall rate of depression was 17.5%, the female prevalence rate was 25%, and the male prevalence rate was 10%. The Structured Clinical Interview for the *DSM-IV* indicated that 15% of the subjects were depressed, the female prevalence rate being 20%, and the male prevalence rate being 10%. These two methods of depression assessment, along with a cardiovascular assessment, are recommended. Implications for clinical practice are discussed and further research to address issues that may predispose women with congestive heart failure to develop clinical depression is recommended.

## ACKNOWLEDGEMENTS

With the completion of this thesis, a chapter of my life is closed. The journey to the completion of this thesis probed my strengths and weaknesses. This journey definitely was not about the outcome, it was about what I learned during the process.

Several individuals made possible the completion of this thesis and deserve special mention and thanks:

To my children Paula and Sergio, for being there, understanding and supporting me.

Special thanks to Dr. Terry Davis, my supervisor and friend, whose patience, understanding, and support made the completion of this thesis a reality. Also thanks to the members of my committee, Dr. C. Ross, and Dr. B. Paulson for being part of the process.

To Dr. Terry Montague who influenced me and supported me in my professional endeavours.

To my co-workers, Judy Sieben, Betty Larson, and Alice Drescher whose contribution to my work is unmeasurable.

To my editor and friend, Elnora Hibbert whose support and encouragement came at a time when I thought I was never going to get my work done.

To dear Martin Dorfman who stood by me and encouraged me over many moments of despair.

To my friend, Isabel Kobek who continued giving me support during the difficult moments.

To my dear patients of the Heart Function Clinic whose cooperation made this research possible.

Finally, to Rene Leiva who once loved me and believed in me.

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# CHAPTER 1

## INTRODUCTION

Depression is one of the most prevalent psychiatric disorders in individuals affected by chronic medical illnesses (Nesse & Finlayson, 1996; Pajer, 1995; Spiegel, 1996). Clinically significant depressive symptoms are experienced by 12% to 36% of these patients. This depression prevalence rate is higher than the prevalence rate found in the general population, that is, 2.3% to 3.2% for men and 4.5% to 9.3% for women (U.S. Department of Health and Human Services, 1993). Rodin, Craven, and Littlefield (1991) report that in individuals with chronic medical illnesses, four times as many females as males show evidence of depressive symptoms. This higher prevalence rate of depression in females with chronic medical illnesses is consistent with the findings in the general population (U.S. Department of Health and Human Services).

Failure to recognize and diagnose depression in patients with chronic medical illnesses may have adverse consequences for the prognosis of these patients. First, symptoms of depression may prevent or delay full recovery in these patients. Symptoms such as depressed mood, pessimism, and low energy appear to be associated with low functional capacity and decreased performance during rehabilitation (U.S. Department of Health and Human Services, 1993). Second, feelings of hopelessness and self-recrimination may result in suicide ideation and/or suicide intent, and may interfere with the ability to comply with rehabilitation or

other treatments (Rodin et al., 1991). Last, in some cases such as patients with recent myocardial infarction, symptoms of depression are associated with an increased risk for mortality (Carney, Freedland, Rich, Smith, & Jaffe, 1993).

The chronic medical illness selected for the focus of this study is congestive heart failure (CHF) because of the clinical expertise of the nurse researcher with this particular clinical population. CHF is a chronic illness associated with high morbidity and mortality rates. Data from the Framingham Heart Study show a particularly high mortality rate from CHF over a 40-year period of observation starting in 1948. The median survival rate, after onset of symptoms in patients with overt heart failure, is reported as 1.7 years in men and 3.2 years in women (Armstrong, 1993). Morbidity for CHF is considerable, amounting to 0.39% of all admissions to hospital annually (Armstrong & Moe, 1993). Understandably, this poor prognosis is devastating for individuals diagnosed with CHF.

## Statement of the Problem

Since patients with CHF are constantly affected by the emotional upheaval associated with the perceived risks of the disease and the continuous changes in signs and symptoms, it is reasonable to expect that some patients with CHF will develop depression. However, the assessment of depression in patients with CHF may be difficult because many of these patients report somatic symptoms such as anorexia, fatigue, and weight loss which are also symptoms contributing to the

diagnosis of depression. This symptom overlap problem can lead to the following two adverse situations.

First, the attending clinician may underestimate or miss altogether the presence of depressive symptoms and overestimate the degree of severity of CHF symptoms. When depressive symptoms are not recognized in patients with CHF, somatic complaints related to the mood disturbance may be viewed as symptoms of CHF and needlessly treated with unnecessary medications. In addition, depressed patients may request more frequent medical evaluations than non-depressed patients with CHF increasing the possibility of further overtreatment. Finally, if depression is not treated in these patients, it may run a prolonged or recurrent course, thereby increasing the likelihood of complications. Successful diagnosis and treatment of depression may significantly improve the prognosis of patients with CHF.

Second, the attending clinician may overestimate the degree or severity of the depression in these patients and consequently underestimate the degree or severity of the CHF. When exacerbation of CHF symptoms are missed, frequent somatic complaints of patients, such as anorexia, fatigue, or restlessness, coupled with low mood, may be interpreted as depressive symptoms by a clinician with little expertise in assessing CHF symptoms. Thus, treatment of depression may be initiated without initiating the proper treatment for CHF symptoms. This increases the risk of the patient with CHF becoming critically ill and requiring hospitalization for aggressive symptomatology therapy.

For these and other reasons, it is important to identify the appropriate method of assessing depression in patients with CHF. Many methods have been developed for the assessment of depression in the population at large (Rodin et al., 1991). These methods include: unstructured clinical interviews conducted by mental health professionals, structured clinical interviews conducted by trained clinicians, and self-report measures of depressive symptoms (U.S. Department of Health and Human Services, 1993). Of these methods, the last two have been used extensively by several groups of researchers (Rodin et al.). One self-report method is the Beck Depression Inventory (BDI), developed by Aaron T. Beck (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI is more reliable than unstructured clinical interviews because of standardized questions or statements, the order of presentation, the choices of the answers, and the scoring methods (Rodin et al.) The Structured Clinical Interview (SCID) was developed to assist trained clinicians in making the diagnosis of depression according to the criteria found in the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association). The SCID has been revised on several occasions since 1987, a date that marks the end of two years of testing with several clinical and non-clinical subjects to determine the reliability of the SCID (Spitzer, Williams, Gibbon, & First, 1992).

## Purpose of the Study

The purpose of this study was to identify the optimal method of assessing the symptoms of depression in patients with CHF, thereby contributing to the

advancement of knowledge in this area. Nurses who assess patients with CHF for depression will be in a better position to plan and implement appropriate nursing interventions which will assist these patients in recovery.

## Objectives of the Study

The objectives of this study were:

1. To assess male and female ambulatory patients with CHF for depression using the BDI and the SCID-Depressive Episode Section (DES).
2. To determine the prevalence and the severity of depression in ambulatory male and female patients with CHF.
3. To determine which of these methods is the optimal method of assessing depression in ambulatory patients with CHF.

# CHAPTER 2

# LITERATURE REVIEW

This literature review focuses on (a) defining depressive feelings, depressive symptoms, and the syndrome of clinical depression; (b) the assessment and prevalence of depression in patients with cardiac disease; and (c) the assessment and the prevalence of depression in patients with other chronic medical illnesses.

## Depressive Feelings, Depressive Symptoms, and the Syndrome of Clinical Depression

When referring to depression there are many interchangeable terms used in the literature and clinical practice: depressive feelings, depressive symptoms, clinical depression, major depressive disorder, and depressive episode. These terms may cloud the understanding of this disorder and at times, confuse the less experienced clinician. Each of these terms is defined in this section: depressive feelings, depressive symptoms, and the syndrome of clinical depression, which includes the terms of major depressive disorder and depressive episode.

### Depressive Feelings

Sadness "is a normal emotion created by realistic perceptions that describe a negative event involving loss or disappointment in an undistorted way" (Burns, 1981, p. 207). This response to loss or disappointment is not permanent, and is not

associated with significant functional impairment (U.S. Department of Health and Human Services, 1993). Patients with CHF typically experience this emotion because they lose their sense of health, their ability to be active members of society, and their ability to maintain family and social relationships (Rodin et al., 1991). Moreover, these patients may describe this "feeling" state by using different words such as "feeling down", "feeling blue", or "feeling sad".

Depressive Symptoms

If the experience of sadness is prolonged, individuals in this depressed mood state may also experience other depressive symptoms such as disturbances in cognition (e.g., difficulty in concentrating and inability to make decisions), disturbances in behaviour (e.g., loss of interest in other people and isolating oneself, and inability to work as well as one is accustomed), and disturbances in somatic functioning (e.g., increased fatigue, weight loss, and loss of libido) (U.S. Department of Health and Human Services, 1993). Davis and Jensen (1988) point out that epidemiological studies suggest that one or two depressive symptoms are present at any given time in the majority of the general population. What distinguishes these depressive symptoms and accompanying mood state from a major depressive disorder is the severity, pervasiveness and duration of the mood disturbance and other depressive symptoms (Reesal & Vincent, 1992).

Clinical Depression

For several decades prior to 1980, there was persistent disagreement surrounding the classification of depressive symptoms among experts in the field (Beck et al., 1961; Mendels, 1968). This conflict was centered on deciding the particular combination of depressive symptoms that would be required to formulate a diagnosis of clinical depression (Davis & Jensen, 1988). In addition, questions such as whether or not depression was a single syndrome with different manifestations and levels of severity, and whether or not it was part of two or more separate conditions were entertained (Mendels).

A consensus of the necessary criteria for the diagnosis of major depressive disorder by clinicians and researchers was finally reached with the publication of the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III) by the American Psychiatric Association in 1980. The *DSM-III* was widely accepted because it provided a set of criteria for the diagnosis and classification of the syndrome of depression (as well as other psychiatric disorders) and an opportunity for increased new research. The research originating from the *DSM-III* facilitated the development and publication of the revised *DSM-III-R* in 1987. Research originating from the *DSM-III-R* led to the development and publication of the fourth edition in 1994 (*DSM-IV*, 1994).

A Major Depressive Disorder is a mood disorder characterized by one or more Major Depressive Episodes. The *DSM-IV* (1994) criteria for a Major Depressive Episode (MDE) include the following:

Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood, or (2) loss of interest or pleasure.

Note: Do not include symptoms that are clearly due to a medical condition, or mood-incongruent delusions or hallucinations

(1) depressed mood most of the day, nearly every day, as indicated either by subjective report (e.g., feels sad or empty) or observation by others (e.g., appears tearful)...

(2) markedly diminished interest or pleasure in all, or almost all, activities most of the of day nearly every day (as indicated either by subjective account or observation made by others)

(3) significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day...

(4) insomnia or hypersomnia nearly every day

(5) psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)

(6) fatigue or loss of energy nearly every day

(7) feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)

(8) diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)

(9) recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide. (p. 327)

As can be seen above, an MDE is a period of depressed mood and/or loss of interest or pleasure in nearly all activities, lasting for at least two weeks, and is accompanied by a constellation of at least four other associated symptoms such as weight loss or difficulty in concentrating. For the diagnosis of an MDE to be considered, a symptom must be either new or have become worse in comparison with the pre-episode condition. In addition, the episode "must be accompanied by clinically significant distress or impairment in social, occupational, or other important areas of functioning" (*DSM-IV*, 1994, p. 320).

Course. The depressive symptoms can develop over a period of days or weeks. Mild depressive symptoms may also precede the onset of a full MDE for several months. The duration of an MDE can vary in length and if untreated, the episode may last six months or longer. The severity of any or all symptoms can also vary from day to day, or week to week. Following an MDE, some patients may be symptom free for years and function normally (*DSM-IV*, 1994).

Predisposing Factors. Frequently reported predisposing factors associated with an MDE are chronic physical illness; current substance abuse such as alcohol or cocaine; stressful life events such as the death of a loved one, marital separation

or divorce; female gender, especially during the postpartum period; lack of social support; history of an MDE in first-degree relatives; and prior episodes of an MDE (U.S. Department of Health and Human Services, 1993).

Complications. Several complications related to depression are reported in the literature. The major complication of an MDE is increased mortality, generally associated with suicide. About 15% of patients with an MDE commit suicide and the risk of committing suicide is 30 times greater for depressed patients than for the general population (Reesal & Vincent, 1992).

Another complication is the degree of impairment due to the depressive episode. This varies according to the severity of the symptoms, but always causes some interference in social and occupational functioning (Reesal & Vincent, 1992). For example, patients with an MDE report substantially poorer intimate relationships and less satisfying social interactions than do other individuals who have previously suffered from depression (U.S. Department of Health and Human Services, 1993). These patients report more physical complaints and experience chronic activity restrictions that may result in loss of work time (Wells et al., 1989). An MDE is second only to cardiovascular disease in terms of time lost from work and loss of productivity. In the United States, the cost for loss of productivity attributed to depression totalled $44 billion in 1993 (Nesse & Finlayson, 1996). Furthermore, some researchers report that patients with an MDE have more physical illnesses than other patients seen in a primary medical setting, and use health care resources more

often than other patients in the general medical setting (U.S. Department of Health and Human Services, 1993).

## MDE in Patients with Cardiac Disease

This section of the literature review focuses on the prevalence of MDEs in (a) patients with an acute myocardial infarction, and (b) patients with CHF. Studies reporting complications of an MDE in patients with cardiac disease are also reviewed.

The time frame for this literature review (CINAHL, Embase, Medline, and PsycInfo databases) is 1988 to 1997, and includes studies using the *DSM-III* (1980), *DSM-III-R* (1987), and the *DSM-IV* (1994) criteria and associated methods to determine the prevalence of MDE in this population of patients. This time frame allows for inclusion of the only nursing research study that used the BDI and the SCID (*DSM-III* criteria) to determine the prevalence of MDE in patients with acute myocardial infarction. Recent research studies of prevalence rates of MDE in patients with cardiac disease are also included.

### Prevalence of MDE in Patients with Acute Myocardial Infarction

The prevalence of MDE has been reported at 3.84%, 5.76% and 9.61% (Davis & Jensen, 1988); 14.9% (Yingling, Wulsin, Arnold, & Rouan, 1993); 16% (Frasure-Smith, Lesperance, & Talajic, 1995); and 9% (Crowe, Runions, Ebbesen, Oldridge, & Steiner, 1996) in patients with documented acute myocardial infarction.

Davis and Jensen (1988) assessed the prevalence of MDE in 52 patients, aged 21 to 65 years, diagnosed with acute myocardial infarction. The purpose of their study was to compare the effectiveness of the SCID (*DSM-III* criteria) conducted by a nurse, with an unstructured clinical interview conducted by a therapist; and to compare the effectiveness of these two methods with that of the BDI (cut-off score of 13). Depression assessments were conducted at two different times. The first assessment consisted of the patients completing the BDI just prior to leaving the hospital. The researchers report a prevalence rate of MDE with the BDI of 9.61%. In addition, 84.62% of patients reported depressive symptomatology and 5.7% reported no depressive symptomatology during the first assessment. At the second assessment, conducted six to eight weeks after the acute myocardial infarction, patients completed the BDI and participated in a structured clinical interview with a nurse using the SCID, and an unstructured clinical interview conducted by an experienced therapist. At the time of the second assessment, the BDI (cut-off score of 13) prevalence rate for an MDE was also 9.61%. However, patients reporting depressive symptomatology increased to 88.46%, and patients reporting no depressive symptoms decreased to 1.92%. The prevalence rate obtained with the SCID (nurse's ratings) was 5.76% and with the unstructured clinical interview (therapist's ratings) was 3.84%. These researchers emphasize that these results indicate a high concordance between the nurse's depression ratings and the therapist's depression ratings (80.7% agreement). However, a low concordance of agreement was noted between the BDI self-report scores and the other two methods

of assessment (13.46% between the BDI and the SCID; and 11.54% between the BDI and the unstructured clinical interview). Davis and Jensen argue that some of the somatic symptoms of an MDE overlap with symptoms of cardiac illness, and that patients may have interpreted their cardiac somatic symptoms, such as fatigue and insomnia, as depressive symptoms thereby inflating the BDI results. Davis and Jensen suggest the use of the somatic symptoms of the BDI in the diagnosis of an MDE only if the symptoms are severe and unrelated to the medical illness. These researchers conclude that a nurse "using the Major Depressive Episode section of the SCID can distinguish clinically depressed, depressive symptomatology, and non-depressed medically ill patients" (p. 195). In addition, these researchers recommend assessing patients for an MDE with the SCID to ratify the BDI results. Davis and Jensen also point out that the lower BDI cut-off score of 13 instead of 21 may yield false-positive results that can be corrected by the use of the SCID.

Yingling et al. (1993) conducted a study in 334 patients with acute chest pain who attended an emergency department during an 8-week period. Patients eligible for this study were 18 years of age or older with chest pain unrelated to trauma or abnormalities evident in a chest radiograph. These researchers wanted to determine whether or not the prevalence of panic disorder and MDE was higher in patients treated by emergency department physicians compared with patients treated by other primary care groups (i.e. cardiologist, general practitioner, or psychiatrist). In addition, Yingling et al. were interested in learning whether the prevalence of panic disorder and MDE was higher in patients with acute chest pain but without the

diagnosis of acute myocardial infarction. The methods used to assess panic disorder were the Panic Disorder Self-Rating Scale and the Zung Self-Rating Anxiety Scale. The BDI was used to assess for an MDE. A BDI score equal to or greater than 19 points was the cut-off score chosen in this study. Patients were contacted by one of these researchers to complete the self-report measures within 48 hours of their visit to the emergency department, depending on their medical condition or availability. No details were given in this paper about the qualifications of the person contacting the patients. These results indicated that 63 of the patients attending the emergency department were admitted to the hospital for evaluation of chest pain. A diagnosis of MDE was made in 14.9% of the 12 patients diagnosed with acute myocardial infarction. Patients found having an MDE by the BDI were retested with the SCID (*DSM-III-R* criteria) by a board-certified psychiatrist or a senior psychiatric resident, "to support the validity of the screening measures" (p. 232). The BDI and the SCID demonstrated agreement of 81.8%. Although these researchers indicate that more women than men were interviewed, they did not specify the prevalence of MDE by gender. These researchers conclude that the results of this study compare to results from other studies that have used self-report methods to assess MDE in outpatients.

In another study, Frasure-Smith et al. (1995) assessed the prevalence of MDE in 222 patients, age 24 to 88 years, between five and 15 days after a documented acute myocardial infarction. These researchers used a modified form of the Diagnostic Interview Schedule for the *DSM-III-R* (1987) criteria. This method is a highly structured interview designed by the National Institute of Mental Health for

epidemiological studies of psychiatric disorders. One of the unique characteristics of the Diagnostic Interview Schedule is the design which allows lay interviewers to gather data (Robins, Helzer, Croughan, & Ratcliff, 1981). The modified form of the Diagnostic Interview Schedule used in this study did not apply the *DSM-III-R* criteria requiring a 2-weeks duration of MDE symptoms. Instead, patients whose symptoms were present every day since admission to hospital were considered to have an MDE. The BDI (cut-off score of 10) was used to measure the severity of MDE in 218 of these same patients. As reported in another paper about this same study (Lesperance, Frasure-Smith, and Talajic, 1996), the interviews were conducted by a research assistant with a bachelor's degree in psychology and training in administering the Diagnostic Interview Schedule and the BDI. The Diagnostic Interview Schedule identified 16% of the 222 patients as having a MDE. The BDI identified 31% of the 218 patients with "mild to moderate" depression; that is with a score equal to or higher than 10. Higher BDI scores were reported by more women than men. There were no other details about the different BDI scores and MDE severity in this paper.

As well in this study, patients identified with an MDE, or members of their family, were contacted 18 months after the myocardial infarction to evaluate mortality. Nineteen of the 21 deaths of patients during the first 18-month period post myocardial infarction were due to cardiac causes. These researchers indicate that mortality was significantly related to an MDE in these patients either diagnosed by the Diagnostic Interview Schedule or the BDI. At the 18-month follow-up, it was

noted that the patients with higher BDI scores had more frequent episodes of ventricular arrhythmia and death. Between 6 and 18 months post myocardial infarction, 9 patients had died as a consequence of ventricular arrhythmias. Of these, two patients had been diagnosed with an MDE by the Diagnostic Interview Schedule; however, five of the nine patients had high BDI scores during baseline assessment. Frasure-Smith et al. (1995) conclude that hospitalized patients with acute myocardial infarction and an MDE are at higher risk of dying during the ensuing 18-month period than non-depressed patients.

In a large randomized six-centre trial, Crowe et al. (1996) assessed 785 hospitalized patients (age range 19 to 72 years) for MDE and anxiety between 2 and 14 days following a documented acute myocardial infarction. The purposes of this study were: (a) to assess the prevalence of anxiety and MDE in patients hospitalized for an acute myocardial infarction; (b) to determine if there was an association between symptom levels of anxiety and MDE during hospitalization for an acute myocardial infarction and sex, infarct severity, and history of previous myocardial infarction; and (c) to describe anxiety and MDE symptoms in a selected group of patients able to exercise in a cardiac rehabilitation arm of the study for the first year post acute myocardial infarction. The State-Trait Inventory was used to assess anxiety in this study population. To assess MDE these researchers used a modified form of the BDI with only 13 of the 21 items. "The short form of the BDI was chosen to reduce response bias associated with fatigue" (p. 101). The three somatic symptoms not included were sleep disturbance, weight loss, and loss of libido; and

the non-somatic symptoms not included in this shorter form were sense of punishment, self accusations, crying spells, irritability, and somatic preoccupation. The shorter form required approximately five minutes to complete and was developed to facilitate the use of the BDI by the family practitioner (Beck & Beck, 1972). "Selection of items for the short form was based on multiple regression analysis that permitted condensation of the inventory without loss of reliability and validity" (p. 82). The research coordinator instructed the patients completing the self-report instruments. Patients were asked to complete the BDI (cut-off score of 5) and the State-Trait Inventory between 2 and 14 days post acute myocardial infarction. It took the patients an average of 15 minutes to complete both instruments. Nine percent of the 785 hospitalized patients with acute myocardial infarction had "moderate to severe" MDE with a total score of 8 or above. Two hundred and one patients were selected to attend the rehabilitation arm trial and were followed for one year. These patients completed the BDI and the State-Trait Inventory at 14, 24, 41 and 56 weeks post acute myocardial infarction. At these times, patients were given the questionnaires by a research coordinator and instructed to complete and return them by mail to the study office. Ten percent of patients in the rehabilitation group continued to have "moderate to severe" MDE up to 41 weeks post myocardial infarction with BDI scores gradually decreasing to levels below a score of eight by the end of the year. Crowe et al. report that there were no differences in severity of MDE in women and men with respect to infarct severity and history of previous myocardial infarction. Some of the limitations of

this study are related to the potential MDE and cardiac symptom overlap that may confuse the interpretation of symptoms reported by patients. In addition, these researchers argue that the short form of the BDI may not satisfactorily identify patients with MDE symptoms, and even in patients identified as having an MDE, their symptoms may be underestimated.

Prevalence of MDE in Patients with Congestive Heart Failure

The literature review identified only one study of MDE in patients with CHF. This study, conducted by Freedland et al. (1991), included 60 patients, 70 years of age or older who were admitted to the hospital with clinical evidence of CHF. The purpose of the study was to determine the prevalence of MDE in elderly patients with CHF. Patients with dementia or medical instability were excluded. These researchers used a modified version of the Diagnostic Interview Schedule for the *DSM-III-R* (1987) to determine the presence of symptoms of MDE. This method was modified to facilitate the administration of the interview to medically ill patients. The changes consisted of adding questions to the current depressive assessment episode and to the symptom severity probe sections. The interviews were conducted by third-year psychiatric residents and an experienced research assistant in diagnostic interview techniques. The records of the interviews were independently reviewed by the residents and by a senior clinician with a 97% inter-rater agreement. In this study, 10 patients (17%) met the *DSM-III-R* criteria for a current MDE during their admission for CHF. Freedland et al. indicate that these patients

still met the criteria for an MDE when the symptoms of fatigue and insomnia were not considered. This study reports no significant differences in the results regardless of sex or age. A follow-up telephone interview of surviving patients was conducted by a research assistant at three months and again at one year. While there were no differences in the prevalence rate of MDEs, there was 50% mortality rate in the patients having an MDE compared to 29% in the patients not having an MDE, but this was not statistically significant.

Complications of an MDE in Patients with Cardiac Disease

Some of complications of an MDE reported in patients with cardiac disease are failure to return to work within three months of myocardial infarction (Schleifer et al., 1989); ventricular tachycardia (Carney et al., 1993); and significantly fewer days of adherence to a medication regimen (Carney, Freedland, Eisen, Rich, & Jaffe, 1995).

Schleifer et al. (1989) studied the nature and course of an MDE following myocardial infarction in 283 patients with a mean age of 63.7 years. Return to work, part-time or full-time, in patients who were working prior to the cardiac event was examined. To assess for an MDE, two trained nurses administered the Schedule for Affective Disorders and Schizophrenia 8 to 10 days, and 3 to 4 months after a documented myocardial infarction. This method is a structured interview that makes diagnosis of MDE according to the Research Diagnostic Criteria. The diagnosis of MDE was made by agreement among the two nurse interviewers and a psychiatrist.

Of these patients, 18% were identified with an MDE eight to 10 days after a myocardial infarction. Only 38% of these patients returned to work within three months as opposed to 63% of those patients without an MDE. These researchers conclude that failure to return to work is more frequent in patients with an MDE and cardiac symptoms, but not in patients reporting either cardiac symptoms or MDE alone.

Carney et al. (1993) examined the relationship between psychiatric depression and ventricular arrhythmia in 103 patients, 75 years of age or older, with documented coronary artery disease. This study was conducted over a 12-month period and included all patients with the diagnosis of coronary artery disease admitted to a hospital. The assessment of an MDE was conducted with the Diagnostic Interview Schedule (*DSM-III-R* criteria) by experienced research assistants. Ventricular arrhythmias were monitored in the hospital by a 24-hour Holter electrocardiographic recording. These researchers conclude that the prevalence of MDE in this population of patients was 20.4%. Although more women were found depressed, the exact prevalence was not indicated. Ventricular tachycardia was significantly higher (23.8%) in patients with an MDE than in patients without an MDE (3.7%). These researchers conclude that the higher prevalence of ventricular tachycardia in these patients may explain why an MDE is a risk factor of mortality in patients with coronary artery disease.

In another study, Carney et al. (1995) studied the effect of an MDE on adherence to taking Aspirin in 55 patients, age 65 years or older, with documented

coronary artery disease. An MDE was diagnosed by the Diagnostic Interview Schedule (*DSM-III-R* criteria). The interview was carried out by an experienced research assistant a few days after patients were admitted for elective angiography. Medication adherence was measured by a medication monitor with an electronic chip that recorded the day and each time a pill was removed. Patients were instructed to take one tablet in the morning and one in the afternoon every day, and were given two of these 21-blister medication packets containing a 3-week supply of Aspirin (81 mg strength) just prior to being discharged from the hospital. Carney et al. state that Aspirin was the medication chosen because it is routinely prescribed to patients with coronary artery disease to prevent cardiac events. In addition, patients were educated about the importance and possible benefits of taking Aspirin regularly. Education was reinforced by the patient's own nurses and physicians. Other medications prescribed at discharge and all new medications added during the time of the study were recorded. These researchers defined adherence "as the percentage of days on which the patient removed two pills from the monitor, regardless of the time of day or the interval between doses" (p. 89). The results of this study indicate that 10 patients (18%) were identified with an MDE. Patients who were having an MDE adhered to the medication regimen on significantly fewer days (45%) in comparison to patients not having an MDE (69%). Carney et al. conclude that while the reasons that depression affects adherence to medication regimes are unknown, a large difference in adherence to prescribed medications may explain the higher rates of morbidity and mortality in older patients with an MDE and cardiac disease.

## MDE in Patients with Other Types of Chronic Medical Illnesses

This section of the literature review focuses on (a) the prevalence of MDE in patients with other types of chronic medical illnesses including HIV-seropositive, Parkinson's disease, multiple sclerosis, and chronic fatigue syndrome; and (b) the complications of MDE in patients with chronic medical illnesses.

The time frame includes studies and literature reviews (Medline and CINAHL databases) dating from 1991 to 1997. Studies using the *DSM-III-R* (1987) criteria and associated methods to determine the prevalence of MDE in this population of patients are included; no studies were found which used the *DSM-IV* (1994) criteria. This limited time frame was chosen in order to examine the assessment methodologies used and the prevalence rates of MDE obtained in the most recent research studies of patients with other types of chronic medical illnesses.

### Prevalence of MDE in Patients with Other Chronic Medical Illnesses

The prevalence of MDE has been reported at 19%, 27%, and 29% in asymptomatic HIV-seropositive male patients (Bornstein et al., 1993); 2.7% in patients with Parkinson's disease (Hantz, Caradoc-Davies, Caradoc-Davies, Weatherall, & Dixon, 1994); 16% and 24% in moderately disabled patients with multiple sclerosis (Moller, Wiedemann, Rohde, Backmund, & Sonntag, 1994); 18.3% in patients with chronic fatigue syndrome (Swanink et al., 1995); and 48.1% with mild to moderate MDE and 16.7% with moderate to severe MDE in patients with scleroderma (Roca, Wigley, & White, 1996).

Bornstein et al. (1993) assessed the prevalence of an MDE in 121 asymptomatic HIV-seropositive male patients in order to examine the relationship between MDE and neuropsychological performance. Several neuropsychological tests were administered to these patients. As well, assessment for an MDE with the SCID (*DSM-III-R* criteria), the Hamilton Rating Scale for Depression, and the BDI (cut-off score of 15) was also conducted "in an attempt to carefully document the possible effects of depression on neuropsychological performance" (p. 923). Assessment of each patient was completed in approximately three and one-half hours on the same day by research assistants. The qualifications of the research assistants were not stated. Bornstein et al. indicate that the SCID identified 19% of patients with an MDE, and the BDI identified 29% of these patients with a score equal to or higher than the BDI cut-off score of 15. No further details regarding the BDI scores and severity of symptoms in these patients were reported. The Hamilton Rating Scale for Depression identified 27% of patients with an MDE. The mean age of the patients found with an MDE was 32.6 years with the SCID; 35.1 years for the BDI; and 33.8 years for the Hamilton Rating Scale for Depression. The multiple neuropsychological test results of the depressed patients were compared with the same tests results in non-depressed patients. Bornstein et al. state that an MDE has little effect on the neuropsychological function in asymptomatic HIV-seropositive patients, regardless of the method used to assess MDE. However, these same researchers indicate there is greater neuropsychological impairment associated with the BDI results. These researchers state that the higher BDI scores may be due to

the fact that the BDI is a self-report method containing numerous somatic items. This makes it difficult for patients to distinguish between neurobehavioral changes and symptoms of MDE. Bornstein et al. conclude that it is advantageous to use several methods of assessing the potential effect of MDE on the neuropsychological performance of HIV-seropositive patients.

Hantz et al. (1994) assessed the prevalence of MDEs in 73 outpatients with Parkinson's disease without dementia. Forty patients were women with a mean age of 77.3 years and 33 were men with a mean age of 73.4 years. The SCID (*DSM-III-R* criteria) was administered by either a psychiatric registrar or a psychiatrist with training in the use of this instrument. The interviews were audiotaped to assess the reliability of the two raters. The results of this study indicate that only 2.7% of the patients, all female, with Parkinson's disease were diagnosed with an MDE. Although the prevalence is lower in this study compared to other studies, the researchers believe their research design included a stricter interviewing methodology, and a more rigorous screening process.

Moller et al. (1994) assessed the prevalence of MDEs in 25 moderately disabled patients (mean age of 37 years) with multiple sclerosis. The purpose of this study was to determine the relationship between magnetic resonance findings and psychopathological findings such as depressive symptoms, cognitive performance and fatigue. The patient's neurological and mental status were assessed using: (a) the SCID (*DSM-III-R* Axis I disturbances); (b) the Inpatient Multidimensional Psychiatric Scale to assess for paranoid-hallucinatory syndrome, other

psychopathological syndromes, depression, and manic syndromes; (c) the Hamilton and Montgomery-Asberg depression rating scales; and (d) the Structured Interview for the Diagnosis of Alzheimer's Dementias and other Etiology. No clear indication of who conducted the interviews was found in this paper. These researchers indicate that there is no significant relationship between depression and cognitive impairment in these patients. In addition, 16% of patients with multiple sclerosis met the *DSM-III-R* criteria for an MDE, while the Hamilton and Montgomery-Asberg depression rating scale identified 24% of these patients with an MDE. Moller et al. state the higher Hamilton and Montgomery-Asberg depression rating scale scores may be influenced by somatic symptoms of multiple sclerosis rather than MDE. These researchers suggest that it is advantageous to use several methods to assess and diagnose an MDE in patients with multiple sclerosis to avoid this problem.

Swanink et al. (1995) investigated the relationship between severity of complaints, laboratory data, and the psychological parameters of patients with chronic fatigue syndrome. In this study 88 patients, 20 to 26 years of age, with chronic fatigue syndrome were randomly selected along with 77 healthy individuals matched for age, sex, and geographical area. Patients with chronic fatigue syndrome and the control group underwent a physical examination, a series of blood tests, and psychological tests. The psychological tests included: (a) the Checklist Individual Strength (or fatigue questionnaire) to measure four aspects of fatigue, (b) the BDI to diagnose an MDE, and (c) the Sickness Impact Profile to assess for functional impairment. No clear indication of who introduced the BDI to patients was found in

this paper. The BDI cut-off score was 16. These researchers report that 18.3% of patients with chronic fatigue syndrome have an MDE versus 1.3% of the control group. They also report that the psychological parameters of fatigue severity, MDE, and functional impairment correlate with the clinical severity of the illness. Swanink et al. conclude that the BDI, Checklist Individual Strength, and the Sickness Impact Profile are valuable methods for psychological assessment in patients with chronic fatigue syndrome.

A study conducted by Roca et al. (1996) was carried out to assess the prevalence and correlation of depressive symptoms in 55 outpatients with scleroderma. The age of the patients was not indicated in this paper. Personality was assessed by the Neuroticism-Extraversion-Openness Personality Inventory; measurement of functional disability was done by the Health Assessment Questionnaire; adjustment to illness was assessed by the Psychosocial Adjustment to Illness Scale; and MDE was assessed by the BDI. Roca et al. explain that the BDI is a method well-designed "to determine whether high scores reflect true depressive symptoms or simply the confounding effects of medical illness" (p. 1038). They add that the BDI allows the examination of not only the total MDE scores, but also the relationships between non-somatic and somatic BDI items and other medical clinical variables. Although the specific BDI cut-off scores are not stated, the researchers report that 26 patients or 48.1% have "mild to moderate" depression with total BDI scores between 10 and 18. In addition, 9 patients or 16.7% have "moderate to severe" depression with total scores of 19 and above. Roca et al., after reviewing

the BDI responses, found non-somatic and somatic symptoms of MDE were "very common" in the group of patients studied. These researchers indicate that the findings of this study "suggest that the depressive symptoms endorsed by patients on the BDI were in fact true depressive symptoms" (p. 1038).

Complications of MDE in Patients with other Types of Chronic Medical Illnesses

Rodin et al. (1991) reviewed the literature regarding the complications of MDE in patients with stroke. These researchers report that patients with an MDE admitted to a rehabilitation program within weeks after a stroke show lower functional capacity at the time of discharge and at three month follow-up. Moreover, patients with an MDE demonstrate decreased motivation to participate in rehabilitation programs after a stroke. These researchers add that an MDE contributes to a longer-term rehabilitation process in the recovery from stroke.

In a literature review of cancer and MDEs, Spiegel (1996) found that diet, sleep, and exercise are all affected by an MDE in patients with cancer. An MDE in these patients affects adjustment to pain and treatment. Hormones known to be influenced by stress and MDE, such as cortisol and prolactin, influence tumour proliferation. Therefore, this researcher argues that the hyperactivity of the hypothalamic-pituitary-adrenal axis observed in MDE among patients with cancer could stimulate tumour progression, especially among hormone-sensitive cancers such as breast cancer. The immune system of patients with cancer is also affected by MDE. An MDE is associated with reduced natural killer cell activity, and these cells

are a subset of T-cells that are involved in cancer surveillance. This researcher indicates that psychotherapy in patients with cancer and MDE results in better patient adjustment, reduced symptoms, and may positively influence the course of the disease.

## Summary and Implications

Several different terms are used in relation to depression and must be understood by the clinician in order to facilitate the diagnosis of this disease. Depressive feelings are normal emotions related to a loss or disappointment and are usually of short duration (Burns, 1981) as opposed to depressive symptoms that may involve prolonged disturbances in cognition, behaviour, or somatic functioning. A clinical depression or MDE is characterized by its severity, pervasiveness and its longer duration of depressive symptoms. The occurrence of one or more MDEs contribute to a major depressive disorder. The criteria for an MDE are well established and include a period of depressed mood and/or loss of interest or pleasure in nearly all activities lasting for at least two weeks, and a constellation of at least four other associated symptoms (*DSM-IV*, 1994). The course of the disease will vary with the individual who may or may not have one or more of the predisposing factors. The major complication of MDE is increased mortality, generally associated with suicide.

In spite of concerns regarding somatic symptom overlap, the method most frequently used to assess the prevalence of MDE in patients with cardiac disease and

other types of chronic medical illnesses is the BDI, by itself or in combination with other methods. However, opinions among researchers vary about its use in these patients. Some researchers indicate that BDI scores may be inflated because patients may confuse cardiac symptoms such as fatigue and insomnia for MDE symptoms (Davis & Jensen, 1988). As well, Bornstein et al. (1993) indicate that the greater neuropsychological impairment associated with higher BDI scores in asymptomatic HIV-seropositive male patients may be caused by difficulties in distinguishing between neurobehavioral changes and symptoms of MDE. However, other researchers argue there is a correlation between MDE, psychological parameters, and fatigue severity in patients with chronic fatigue syndrome and that the BDI is a valuable method to assess MDE in these patients (Swanink et al., 1995). Roca et al. (1996), after looking at the relationships between somatic and non-somatic BDI items and other medical variables, argue that while BDI somatic and non-somatic symptoms are "very common" in patients with scleroderma, "these patients score true MDE symptoms in the BDI" (p. 1038). These researchers describe the BDI as a well-designed method "to determine whether high scores reflect true depressive symptoms or simply the confounding effects of medical illness" (p. 1036). Yingling et al. (1993) also support the use of the BDI to assess MDE in patients post myocardial infarction. Results of their study are comparable with results of other studies using self-report measures, and when patients identified as having an MDE by the BDI were retested with the SCID (*DSM-III-R* criteria), both methods reached an 81.8% agreement.

There was no agreement among researchers about the BDI cut-off scores. For example, Davis and Jensen (1988) decided on BDI cut-off score of 13 based on the findings of Beck and Beamsderfer (1974) who point out that although "a total score greater than 21 identifies a relatively pure group of severely depressed subjects... a score of 13 or greater should be considered significant for screening" (Davis & Jensen, p. 142). Yingling et al. (1993) used a cut-off score equal to or greater than 19 with no explanation for their decision. Frasure-Smith et al. (1995) used a cut-off score of 10 because "patients with BDI scores of greater than or equal to 10 are considered to show at least moderate symptoms of depression" (p. 1000). Crowe et al. (1996), who used a short form of the BDI, used a cut-off score of five because "a score of five or more on the short form of the BDI is associated with moderate levels of depression" (p. 100). Bornstein et al. (1993) used BDI cut-off scores of equal to or greater than 15 without explaining the rationale behind their decision. Swanink et al. (1995) used a cut-off score of 16 because "a score of 16 or more is indicative of a clinical depression" (p. 501). Roca et al. (1996) did not specify BDI cut-off scores but indicated that 26 subjects had "mild to moderate" depression with total scores between 10 and 18.

The SCID, following standard criteria for the *DSM-III* (1980) and *DSM-III-R* (1987), was used by itself or to corroborate the results of other methods. Although the SCID requires extensive training to be administered, it is designed to be used by clinicians with experience who can adapt the questions of the interview to fit the subject's understanding. In addition, the clinicians can ask additional questions to

clarify inconsistencies in order to make the proper diagnosis (Spitzer et al., 1992). According to Davis and Jensen (1988), a nurse using this method can dependably differentiate between individuals who have an MDE and those who do not.

When Davis and Jensen (1988) compared the results of the SCID (*DSM-III* criteria) with the results of the BDI in the assessment of patients post myocardial infarction, there was low agreement (13.46%) between these two methods. The use of the SCID is recommended to correct for the possibility that low BDI cut-off scores may yield false-positive results. Yingling et al. (1995) also retested patients with acute myocardial infarction identified with MDE by the BDI with the SCID (*DSM-III-R* criteria). These researchers followed this procedure "to support the validity of the screening measures" (p. 232). In addition to using the SCID (*DSM-III-R* criteria) in male HIV-seropositive patients, Bornstein et al. (1993) used the BDI and the Hamilton Rating Scale for Depression, "in an attempt to carefully document the possible effects of depression on neuropsychological performance" (p. 923). Others have used the SCID because it "has been shown to be highly reliable" (Hantz et al., 1993, p. 1011) and because "it seems advantageous to combine psychopathometric scales appropriate for statistical analysis with clinically defined, DSM-III-R...based standardized inventory for psychiatric diagnosis" (Moller et al., 1994, p. 120).

Another frequently used method for the assessment of MDE in patients with cardiac disease, and by almost the same group of researchers, is the Diagnostic Interview Schedule for the *DSM-III-R* (1987) criteria. This method also follows

standardized criteria to make diagnoses of MDE, but unlike the SCID, the Diagnostic Interview Schedule "was designed for use by lay interviewers with one week of intensive training" (Spitzer et al., 1992, p. 624). This is a potential limitation of this method because "most valid diagnostic assessment still requires the skills of a clinician with experience" (p. 624).

Other methods used in the assessment of depression include rating scales. One of these, the Hamilton Rating Scale for Depression (Bornstein et al., 1993), uses 17 items in the assessment. The grading score ranges from (0) *absent*, to (1) *mild or trivial*, (2) and (3) *moderate*, and (4) *severe*. The subject is rated by two psychiatrists and the scores are summed. When only one rater uses the scale, the score is doubled to make the score comparable. This rating scale was developed to be used only on patients already diagnosed as experiencing depression (Hamilton, 1960).

Another rating scale used for assessment of depression is the Montgomery-Asberg Depression Rating Scale. This 10-item scale is designed to compare the treatment effects of antidepressant drugs that have different mechanisms of action. This scale can be used by trained nurses, psychologists, and psychiatrists (Montgomery & Asberg, 1979).

A third rating scale is the Schedule for Affective Disorders and Schizophrenia, designed to meet the Research Diagnostic Criteria for depression "in an effort to reduce information variance in both the descriptive and diagnostic evaluation of a subject" (Endicott & Spitzer, 1978, p. 837). This scale is able to

provide information regarding the level of psychopathology and functioning of the subject during the week prior to the assessment as well as a detailed description of the present episode of depression. The use of this rating scale is limited to psychiatrists, clinical psychologists, or psychiatric social workers because it requires extensive psychiatric knowledge to administer.

The prevalence rates of MDE in patients with cardiac disease vary depending on the assessment method used, but are consistently higher than the rates found in the general population. A prevalence rate of 17% is reported in patients with CHF (Freedland et al., 1991). Frasure-Smith et al. (1995) report MDE prevalence rates of 16% and 31% in patients assessed post myocardial infarction. Crowe et al. (1996) report prevalence rates (9% and 10% of "moderate to severe" MDE) similar to those of Davis and Jensen (1988) at 9.61%, 5.76%, or 3.84% depending on the method used. In post myocardial infarction patients examined for return to work patterns, the MDE prevalence was reported at 18% (Schleifer et al., 1989). The prevalence rate is reported as 20.4% in post myocardial infarction patients examined for presence of ventricular tachycardia (Carney et al., 1993), and 18% in post myocardial infarction patients examined for adherence to a medication (Carney et al., 1995).

A high variability of MDE prevalence rates is also reported in patients with other types of chronic medical illnesses, depending on the assessment method used. Bornstein et al. (1993) report three different MDE prevalence rates in the same asymptomatic HIV-seropositive male patients: 19%; 27%; and 29%. Moller et al.

(1994) report two different MDE prevalence rates in the same patients with multiple sclerosis: 16% and 24%. Swanink et al. (1995) report an MDE prevalence rate of 18.3 % in patients with chronic fatigue syndrome, and in a study of patients with scleroderma, Roca et al. (1996) report that 48% of these patients scored "mild to moderate" MDE and 16.7% scored "moderate to severe" MDE. Hantz et al. (1994), however, report the lower MDE prevalence of 2.7% in patients with Parkinson's disease.

Several complications of an MDE in patients with cardiac disease were reported in the studies reviewed. Schleifer et al. (1989) report that only 38% of patients identified with an MDE 10 days post-myocardial infarction returned to work within three months of the cardiac event, compared to 68% of patients not suffering with MDE. However, this trend was observed more frequently in patients suffering cardiac symptoms and symptoms of MDE simultaneously than in patients suffering from one or the other symptoms in isolation. Second, Carney et al. (1993) report that ventricular tachycardia was significantly higher in patients with coronary artery disease and an MDE (23.8%) than in patients without an MDE (3.7%). These researchers argue that the higher prevalence of ventricular tachycardia in patients with coronary artery disease and MDE may explain the higher risk of mortality in these patients. That patients with coronary artery disease and suffering with an MDE are at higher risk of morbidity and mortality may also be explained by the results of another study conducted by Carney et al. (1995). These researchers report adherence to the taking of Aspirin during significantly fewer days in patients with coronary

artery disease and having an MDE (45%) than in patients not having an MDE (69%). They argue that patients with MDE may not adhere to other prescribed medication regimes. Frasure-Smith et al. (1995) report that higher BDI scores are associated with more frequent episodes of ventricular arrhythmias, thereby explaining the higher risk for mortality in these patients during the period of 18 months post-myocardial infarction. Similarly, Freedland et al. (1991) observed a 50% mortality rate over a year in patients with CHF and an MDE compared to 29% mortality in patients with CHF and no MDE.

Complications of MDE have also been reported in patients with other types of medical illnesses. Patients post stroke and with an MDE have diminished motivation to participate in rehabilitation programs, and take longer to recover from stroke (Rodin et al., 1991). An MDE, in addition to altering sleep, diet and exercise in patients with cancer, affects adaptation to pain and treatment, and stimulates tumour proliferation (Spiegel, 1996).

## Conclusions

This literature review includes the recent research studies related to the assessment of MDE in patients with cardiac disease and other chronic medical illnesses. The importance of identifying an MDE in patients with cardiac disease and the methods used for assessment of depression are highlighted.

The BDI alone or in combination with other assessment methods is used most frequently in the assessment of the prevalence of MDE in patients with cardiac disease and other chronic medical illnesses. Researchers are concerned about somatic symptom overlap between depression and chronic illnesses and recommend the use of multiple methods of assessment to ensure the accuracy of diagnosis. No agreement has been reached among researchers about the most appropriate cut-off score.

The structured clinical interviews employed in these studies include the SCID and the Diagnostic Interview Schedule. The SCID for the *DSM-III* and *DSM-III-R* criteria requires the expertise of clinicians with experience to administer and is also used frequently alone or to confirm the results of other methods. The Diagnostic Interview Schedule for the *DSM-III-R* criteria is designed for use by lay interviewers which may reduce its validity.

While one research study conducted by nurses in which the BDI and the SCID were used with patients with cardiac disease is reported, no such study in patients with other types of chronic medical illnesses was found.

Prevalence rates of an MDE in patients with cardiac disease vary from 3.84% to 31%, and in patients with other chronic medical illnesses from 2.7% to 48%, depending on the method used. While the prevalence rate of depression in hospitalized patients with CHF is reported in one study, no studies were found that reported the prevalence rate of depression in ambulatory patients with CHF. Early detection of an MDE in these patients by nurses and other health care professionals,

followed by appropriate intervention, may prevent the devastating complications associated with clinical depression in patients with CHF.

Based on the findings of this literature review, the BDI and the SCID were selected as the methods to assess the prevalence of MDE in ambulatory male and female patients with CHF.

# CHAPTER 3

# METHODS

The purpose of this chapter is to describe the study methods. The study design is described, followed by a description of the setting, population and sample selection, procedures and data collection, and ethical considerations specific to this study. The chapter concludes with a description of the data analysis.

## Design of the Study

The descriptive study was designed to identify the optimal method of assessment and to determine the prevalence and the severity of depression in ambulatory patients with CHF. Following random selection of male and female subjects from the New York Heart Association (NYHA) classification groups 2 and 3, all subjects were assessed using the same data collection instruments. As well as a cardiovascular assessment, subjects were assessed with the BDI and the Depressive Episode Section of the SCID (SCID-DES). The prevalence and severity of depression in these subjects were determined.

## Setting

The study was conducted in a large urban acute care teaching hospital in Western Canada. An outpatient clinic specializing in the care of patients with cardiac

disease provided the population for the study. Both male and female patients attended this clinic as scheduled for treatment and monitoring of their disease.

## Population and Sample Selection

The population for this study consisted of 229 ambulatory patients with CHF who lived in the City of Edmonton and vicinity, and who had attended the Heart Function Clinic of the University of Alberta Hospital for at least six months prior to the initiation of the study. Patients living outside of the designated geographical area, those who were unable to read and understand English, and those who were non-ambulatory were excluded from the population for study. As shown in Table 1, these potential subjects were categorized into eight groups according to gender and disease classification severity. The NYHA classification system (see Appendix A) was used to determine the disease classification severity. This information was obtained from the clinical records of the patients who attended the clinic.

Table 1

Target Population According to NYHA Classification System and Gender

| Gender | NYHA 1 | NYHA 2 | NYHA 3 | NYHA 4 | Total |
|---|---|---|---|---|---|
| Male | 39 | 61 | 39 | 12 | 151 |
| Female | 4 | 28 | 41 | 5 | 78 |
| Total | 43 | 89 | 80 | 17 | 229 |

Note. NYHA = New York Heart Association classification level.

The original plan for this study was to include five male and five female subjects randomly selected from each of the classification groups for a total of 40 subjects. Because of the small number of potential female subjects categorized in NYHA 1 and NYHA 4, the population for this study was restricted to 169 subjects categorized in NYHA 2 and NYHA 3. All of these potential subjects met the inclusion criteria which were: ambulatory, lived in the City of Edmonton or in the vicinity, attended the Heart Function Clinic for at least six months, and able to read and understand English.

Forty subjects were randomly selected for inclusion in the study: 10 men and 10 women from NYHA 2, and 10 men and 10 women from NYHA 3. Random selection occurred using the "Jot Randomization Program", a process numbering format on the UNIX Utility at the University of Alberta Hospital.

## Assessment Modalities

A cardiovascular assessment and a depression assessment were conducted on each subject enrolled in the study. A structured format was used for each assessment to ensure that the data collection procedure for each subject was consistent.

### Cardiovascular Assessment

The purpose of this assessment was to gather information in order to distinguish between the somatic symptoms of CHF and the somatic symptoms of

depression, to verify the NYHA classification previously obtained, and to identify any changes in symptomatology from the previous assessments.

The cardiovascular assessment followed the structure as outlined on the Heart Function Clinic Flow Chart (see Appendix B). This provided the framework for a thorough and systematic assessment as described by Seidel, Ball, Dains, and Benedict (1991).

The New York Heart Association Classification System. This classification system (see Appendix A) is based on the relationship between symptoms of CHF and the amount of effort required to provoke them. Two cardinal symptoms of CHF, evaluated by the NYHA classification, are respiratory distress manifested by breathlessness present in progressively increasing severity, and fatigue. These two symptoms limit normal activities such as self-care, walking, or climbing stairs. This classification system assigns numerical values to subjective findings which allows a comparison of groups of patients as well as the same patient at different times. Although there are some limitations, the clinician using this system is able to categorize the degree of cardiovascular disability so that the patient's status and the effects of therapeutic intervention can be followed over time (Braunwald, 1988).

## Depression Assessment Strategies

The two instruments used to assess each subject for depression were the BDI (Beck, 1978) and the depressive episode sections of the SCID (First, Spitzer, Gibbon, & Williams, 1996). The SCID, as used in this study, included the Current

and the Past Major Depressive Episode sections of the Mood Episodes Module, and was adapted as shown in Appendix C to facilitate the ease of the interviewer during the assessment. The BDI is a commercially available preprinted form.

Structured Clinical Interview for the DSM-III, -III-R, and -IV. Spitzer and Williams initiated the development of the different modules of the SCID following the annual meeting of the American Psychopathological Association in 1983. The purpose of this work was to include the *DSM-III* (1980) criteria in an assessment procedure of mental disorders and to incorporate other elements not included on clinical diagnostic instruments available at that time. The modules of the SCID for the assessment and diagnosis of MDE and other mental disorders according to the *DSM-III-R* criteria were finalized in 1987 (Spitzer et al., 1992). Revisions to include the *DSM-IV* were completed in 1996 (First et al., 1996).

The two initial screening questions probing for symptoms of a current MDE are: "In the last month ...has there been a period of time when you were feeling depressed or down most of the day nearly every day?", and "...what about losing interest or pleasure in things you usually enjoyed?" (First et al., 1996, p. A1). The rest of the questions regarding a current depressive episode are asked only if at least one of these two symptoms are present. If the criteria are not met, the clinician does not ask the rest of the questions of the current MDE section and continues with the section about past MDE (Dunner & Tay, 1993).

Spitzer et al. (1992) point out these close-ended questions, requiring a "yes" or "no" answer, are followed by others such as "What was that like?" in order to

clarify areas that are unclear. This type of format allows the clinician to use professional judgment and modify or add to the interview questions, thereby minimizing the potential of the patient's denial of symptoms. For example, if the patient appears "down" or "depressed", the clinician may comment about the patient's appearance and request more information. Finally, the clinician rates the patient's response to the specific question selecting one of four codes: 1 (*absent or false statement*), 2 (*subthreshold condition but almost meeting threshold for the criterion*, e.g., depressed for 10 days instead of 2 weeks), 3 (*meet the criteria or is a true statement*), or ? (*deficient information to code*) (Spitzer et al.).

The SCID-DES usually requires approximately 30 minutes to conduct. Following administration of the SCID-DES, the clinician classifies the patient as: (a) meeting the *DSM-IV* criteria for an MDE, (b) having depressive symptoms but not of sufficient number or duration to meet the *DSM-IV* criteria for an MDE, or (c) no evidence of depressive symptoms.

Spitzer et al. (1992) recommend that SCID interviewers have extensive clinical experience and knowledge in psychiatry to conduct a diagnostic interview. In most of the studies that use the SCID, the individuals conducting the interviews have professional training in psychiatry, psychology, or social work. Training of the new interviewer should include supervised practice by an experienced SCID interviewer. Reliability should be assessed by test-retest interview in which the interview is repeated by a second interviewer with the same subject. Another option is

videotaping or audiotaping of the interview. Discussion of the interview techniques and disagreements should follow.

SCID reliability. The reliability of the SCID was tested by a test-retest method conducted in 592 subjects (Williams et al., 1992). This method consisted in two clinicians interviewing and rating the same subject independently. "Agreement between interviewers is expressed in terms of κ, a statistic that corrects for chance of agreement" (p. 632). "A high value (generally .7 or above) indicates good agreement, κs ranging from .5 to .7 generally indicate fair agreement, and below .5 is poor" (p. 632). Agreement for current MDE was .64. This reliability "is roughly similar...to that obtained with other major diagnostic instruments" (p. 636).

Inter-rater reliability of the SCID-DES. The clinical nurse researcher was trained to administer the SCID-DES by a nurse-psychologist with expertise in the use of this structured clinical interview. The following steps were used to train the clinical nurse researcher to ensure an acceptable level of skill in conducting the interview before proceeding with the study.

1. The nurse-psychologist role-played with the clinical nurse researcher until she demonstrated a clear understanding of the interview. During the role-plays, the clinical nurse researcher role-played a patient first, and then role-played an interviewer with the nurse-psychologist assuming the opposite role.

2. The clinical nurse researcher videotape recorded herself conducting a depression assessment of a patients with CHF, using the SCID-DES.

3. The nurse-psychologist independently reviewed the recorded interview as soon as it was completed and scored the subject's verbal responses to the interview questions.

4. The clinical nurse researcher and the nurse-psychologist then reviewed the recorded interview together and discussed areas of agreement and disagreement.

5. The clinical nurse researcher videotape recorded an assessment of depression in a second patient with CHF. This procedure was followed by steps three and four sequentially.

6. The clinical nurse researcher videotape recorded a third patient with CHF. Once again, this procedure was followed by step three and step four sequentially.

7. With the completion of step six, a high inter-rater reliability was achieved and the clinical nurse researcher proceeded with subject assessments.

Beck Depression Inventory. The BDI is a relatively short, easily administered self-report instrument developed by Beck et al. (1961) to objectively assess depression in patients by measuring their symptoms of depression (Schwab, Bialow, Clemmons, Martin, & Holzer, 1967). While stressing cognitive symptoms, its structure allows for the possibility of systematic items or "subscale" analyses (Clark, Cavanaugh, & Gibbons, 1983). The BDI has been used extensively, not only for assessing the severity of depression in psychiatrically diagnosed patients, but also for detecting depression in normal populations (Beck, Steer, & Garbin, 1988). In addition, the BDI is used to assess changes in severity of the depressive symptoms across time (Davis & Jensen, 1988). The BDI is one of the most commonly used

measures of depressive symptoms in medically ill samples and has become a very popular instrument in research and clinical practice (Rodin et al., 1991).

The BDI consists of 21 categories of symptoms and requires approximately 15 minutes for the patient to complete. Each of the symptom categories has four ranked statements which describe specific manifestations of depression and reflect the range of severity of symptoms of depression. The 21 symptoms included in the BDI are (a) mood, (b) pessimism, (c) sense of failure, (d) lack of satisfaction, (e) guilty feeling, (f) sense of punishment, (g) self-hate, (h) self-accusations, (i) self-punitive wishes, (j) crying spells, (k) irritability, (l) social withdrawal, (m) indecisiveness, (n) body image, (o) work inhibition, (p) sleep disturbance, (q) fatigability, (r) loss of appetite, (s) weight loss, (t) somatic preoccupation, and (u) loss of libido. Two of the groups of statements are shown to illustrate the construction of the questionnaire.

| | | |
|---|---|---|
| 1. | 0 | I do not feel sad. |
| | 1 | I feel sad. |
| | 2 | I am sad all the time and I can't snap out of it. |
| | 3 | I am so sad or unhappy that I can't stand it. |
| 2. | 0 | I am not particularly discouraged about the future. |
| | 1 | I feel discouraged about the future. |
| | 2 | I feel I have nothing to look forward to. |
| | 3 | I feel that the future is hopeless and that things cannot improve. (Beck, 1978, used with permission, see Appendix D) |

Subjects rate each symptom item with a score ranging from 0 (*absent*) to 3 (*severe or persistent presence of the symptom*). The responses to the 21 symptoms categories are summed to give a total BDI score ranging between 0 to 63. The summation of scores reflects the overall severity of depression (Rodin et al., 1991).

Guidelines for cut-off scores to use with patients diagnosed as having a depressive disorder, but physically well have been provided by the Centre for Cognitive Therapy (Beck et al., 1988). These cut-off scores divide BDI scores into four levels of depression severity: (a) 0 to 9 indicates "none or minimal" depression, (b) 10 to 18 indicates "mild to moderate" depression, (c) 19 to 29 indicates "moderate to severe" depression, and (d) 30 to 63 indicates severe depression.

Beck et al. (1988) indicate that the cut-off score ranges of the BDI are variable and depend on the nature of the sample and purpose for which the instrument is being used. Cut-off scores of 13 for screening and 21 for clinical research have been recommended by Beck and Beamesderfer (1974). When the BDI is used to include the maximum number of depressed cases, the cut-off score can be lowered to minimize false-negative cases. To minimize the prevalence of false-positive cases a higher cut-off score can be used. Rodin et al. (1991) report that researchers have not agreed on the cut-off scores to screen for clinical depression in the physically ill.

For the purpose of this study, a cut-off score of 13 was selected to minimize the number of false-negative assessments. In addition, the 21 BDI categories of depression symptoms were divided into somatic and non-somatic symptom

categories. The five somatic symptom categories are: sleep disturbance, fatigability, loss of appetite, weight loss, and loss of libido. The remaining 16 items are non-somatic symptom categories.

Reliability and validity. The literature, accumulated over a 25 year span, about the psychometric properties of the BDI was reviewed by Beck et al. (1988). Some standardization data are also available in the original report (Beck et al., 1961).

The reliability of the BDI, in terms of internal consistency and stability, are presented. After reviewing 25 studies which addressed this method for internal consistency in psychiatric and nonpsychiatric populations, the mean alpha coefficient was estimated as 0.86 for the psychiatric population and 0.81 for the nonpsychiatric population (Beck et al., 1988). In a review of "10 studies that have reported pre- and posttest administrations of the BDI" (p. 84) with hours-to-weeks time intervals, the Pearson product-moment correlation coefficient ranged from 0.48 to 0.86 for psychiatric patients and from 0.60 to 0.83 for nonpsychiatric subjects.

The content, concurrent, and construct validity of the BDI were also reviewed and reported by Beck et al. (1988). With respect to content validity, Moran and Lambert (1983), who compared the content of the BDI with the *DSM-III* criteria, indicate that six of the nine *DSM-III* criteria are reflected well, two of the criteria are partially addressed, and one is not included. The BDI asks about losses of appetite, not increases of appetite, and about sleeping difficulties, not diurnal sleeping variations. The BDI does not include psychomotor activity and agitation.

Beck et al. (1988) argue that the omission of increased appetite and increased sleep are deliberate because the occurrence of loss of appetite is 72% and sleep disturbance is 87% in severely depressed patients (Beck, 1967). As well, agitation is a sign that can be observed clinically and does not need to be incorporated in a self-report instrument.

Concurrent validity is addressed by the Pearson product-moment correlations between the BDI and four measures of depression used concurrently (Beck et al., 1988). The mean correlation coefficient between the Hamilton Psychiatric Rating Scale for Depression and the BDI was 0.73 in five psychiatric studies; between the Zung Self-Report Depression Scale and the BDI was 0.76 in eight psychiatric studies; between the MMPI Depression Scale and the BDI was 0.76 in seven psychiatric studies; and between the Multiple Affect Adjective Checklist Depression Scale and the BDI in two psychiatric studies was 0.66 and 0.59.

Construct validity is addressed in several studies reviewed by Beck et al. (1988). The scores of the BDI are positively correlated to the quantity of alcohol consumption, and symptomatology attributable to excessive alcohol usage. With respect to adjustment indicators, the scores of the BDI were positively correlated to the teacher ratings of students' maladjustment in the seventh grade ($r = 0.62$) and in the eighth grade ($r = 0.60$). Also, higher scores of the BDI indicating depression were inversely correlated to marital adjustment. Other studies have reported inverse correlations between the BDI scores and social desirability. The BDI scores have

shown significant correlations with self-reported anxiety and a variety of medical symptoms such as headaches, upset stomach, suicidal behaviours, and stress.

## Procedures and Data Collection

The clinical nurse researcher reviewed all of the records of those patients attending the Heart Function Clinic and classified those who met the criteria for inclusion in the study. After random selection of the subjects, the following steps were initiated to complete the data collection process.

### Step 1: Subject Access

The randomly selected patients were telephoned by a secretary from the Heart Function Clinic to obtain permission for the clinical nurse researcher to contact them regarding their possible inclusion in a nursing study. The names of patients who agreed to be contacted were then relayed to the clinical nurse researcher.

### Step 2: Verbal Informed Consent

The clinical nurse researcher telephoned the prospective subjects to explain the purpose of the study, to obtain a verbal consent, and to arrange a time and place to conduct the cardiovascular and depression assessments.

Step 3: CHF and MDE Assessment

These assessments were arranged at convenient times for the patient at the location of their choice, either in their home or in the outpatient clinic. The same clinical nurse researcher conducted all the assessments.

Written informed consent. Prior to starting the assessments, a written informed consent (see Appendix E) was obtained from each subject.

Demographic data. Demographic information regarding age, gender, education, and marital status was obtained.

Cardiovascular assessment. The cardiovascular assessment was conducted to confirm the subject's current functional status based on the NYHA classification. As well, a medication review was conducted and the patient's weight obtained. Changes in functional status based on the NYHA classification and other changes or concerns regarding symptomatology were noted and described. The data was documented on a flow chart. An average time of 20 minutes was required to complete the cardiovascular assessment. The NYHA classification obtained for each subject during this assessment was compared to the previously assigned NYHA class to determine whether or not the subject's CHF symptoms were stable.

Depression assessment. The SCID-DES was the first instrument used followed by the BDI. As expected, the total time for these assessments took an average of 35 minutes, with the SCID-DES requiring an average of 20 minutes and the BDI an average of a further 15 minutes.

Using the form adapted for this study (see Appendix C), the clinical nurse researcher asked the subject the two screening questions of the SCID-DES related to current major depressive syndrome. If one or both of the symptoms (depressed mood, and loss of interest or pleasure) were present, the rest of the questions in the section were pursued. If the criteria for one or both of these questions were not met, the rest of the questions in the section were not asked. The section on past major depression syndrome was then explored in a similar manner. Following completion of this interview, the subject's responses were rated and the subject was classified into one of three groups: (a) meet the *DSM-IV* criteria for an MDE; (b) have depressive symptoms but not of sufficient number or duration to meet the *DSM-IV* criteria for an MDE; or (c) no evidence of depressive symptoms.

The clinical nurse researcher remained with the subject during the completion of the BDI to assist the subject in understanding the procedure and in completing the self-report questionnaire. The instructions were read slowly and clearly to the subject. It was emphasized that the symptoms must describe the feeling over the past week including the day of the interview. This was repeated on at least three occasions while the subject was answering the questionnaire. One of these occasions was always just prior to the statement, "I can work as well as before" which refers to the somatic symptom of fatigue. This procedure was carried out to ensure that the subject was referring to symptoms related to depression and not to those physical symptoms associated to CHF. The responses to the categories were reviewed and the

subject was classified into one of three groups depending on the sum of the scores reported.

Treatment and problem solving. The clinical nurse researcher planned the treatment and problem solving strategies depending on the subject's condition.

Step 4: Interview Closure

The clinical nurse researcher informed the subject that the interview and assessment were complete.

## Ethical Considerations

Ethical guidelines of the University of Alberta and of the institution were followed. The procedures followed were acceptable for research involving human subjects (see Appendix F).

Prior to entering the study, the clinical nurse researcher explained to the participants the purpose of the study, the role of the participants in the study, the voluntary participation, and confidentiality issues. Subjects were informed that there were no anticipated risks or benefits by participating in this study. Subjects were also informed that the clinical nurse researcher would refer them immediately to an appropriate medical or health care service if psychological or physical problems that required attention were identified. After this verbal information was given, subjects were asked to sign a written consent form.

## Summary

The descriptive study, conducted in a large urban acute care hospital in Western Canada, was designed to identify the optimal method of assessing depression patients with CHF. Ten male and 10 female subjects from each of NYHA 2 and NYHA 3 classifications were randomly selected for inclusion in the study. A cardiovascular assessment as described by Seidel et al. (1991), using the structure of the Heart Function Clinic Flow Chart, and a depression assessment, using the SCID-DES and the BDI, were conducted by a clinical nurse researcher on each subject. The results of each assessment were tabulated and prevalence rates were calculated. Comparisons were made between groups of subjects. The concordance between the SCID-DES and the BDI was calculated.

# CHAPTER 4

# RESULTS

The purpose of this chapter is to present the results of the study. The characteristics of the sample are described, followed by the cardiovascular assessment findings and the depression assessment findings. Then, the concordance of the BDI and the SCID-DES depression assessment findings is discussed. Finally, the depressive symptoms of the subjects are described.

## Sample Characteristics

The subjects for this study consisted of 4 groups of ambulatory patients with CHF: 10 female NYHA 2 subjects; 10 male NYHA 2 subjects; 10 female NYHA 3 subjects; and 10 male NYHA 3 subjects. Thirty-three subjects were seen at their home during the evening or week-end. Seven subjects elected to be seen in the outpatient clinic area of the University of Alberta Hospital at convenient times. Subjects were numbered from s-1 to s-40 in order of assessment.

The NYHA classification, age, marital status, and educational level of the female subjects are shown in Table 2. The average age of the female NYHA 2 subjects is 66.4 years with the age range of 24 to 82 years. The average age of the female NYHA 3 subjects is 69.5 years with the age range of 30 to 86 years.

Table 2

NYHA Classification, Age, Marital Status, and Educational Level of Female Subjects

| Subject | NYHA Classification | Age | Marital Status | Educational Level |
|---|---|---|---|---|
| s-1 | 2 | 81 | Single | Diploma in Nursing |
| s-2 | 2 | 78 | Single | Baccalaureate in Education |
| s-3 | 2 | 73 | Widow | Grade 11 |
| s-4 | 2 | 69 | Widow | Grade 12 |
| s-9 | 2 | 82 | Widow | Grade 10 |
| s-10 | 2 | 66 | Widow | Grade 8 |
| s-11 | 2 | 58 | Widow | Grade 12 |
| s-12 | 2 | 66 | Married | Diploma in Business |
| s-15 | 2 | 67 | Single | Grade 8 |
| s-18 | 2 | 24 | Married | Grade 12 |
| s-5 | 3 | 85 | Widow | Grade 10 |
| s-6 | 3 | 78 | Widow | Grade 10 |
| s-7 | 3 | 79 | Married | Grade 9 |
| s-8 | 3 | 75 | Married | Grade 8 |
| s-17 | 3 | 75 | Married | Grade 7 |
| s-20 | 3 | 63 | Married | Grade 8 |
| s-22 | 3 | 39 | Divorced | Grade 10 |
| s-24 | 3 | 86 | Married | Grade 4 |
| s-26 | 3 | 85 | Widow | Grade 12 |
| s-36 | 3 | 30 | Married | Grade 12 |

Note. NYHA = New York Heart Association classification level.

The NYHA classification, age, marital status, and educational level of male subjects are shown in Table 3. The average age of the male NYHA 2 subjects is 67.9 years with the age range of 57 to 85 years. The average age of the male NYHA 3 subjects is 74.7 years with the age range of 66 to 82 years.

Table 3

NYHA Classification, Age, Marital Status, and Educational Level of Male Subjects

| Subject | NYHA Classification | Age | Marital Status | Educational Level |
|---|---|---|---|---|
| s-13 | 2 | 69 | Married | Grade 11 |
| s-14 | 2 | 83 | Widower | Grade 9 |
| s-25 | 2 | 85 | Married | Grade 8 |
| s-32 | 2 | 57 | Married | Grade 12 |
| s-33 | 2 | 66 | Married | Grade 10 |
| s-35 | 2 | 64 | Married | Chartered Accountant |
| s-37 | 2 | 59 | Married | Grade 11 |
| s-38 | 2 | 60 | Married | Grade 10 |
| s-39 | 2 | 68 | Married | Grade 5 |
| s-40 | 2 | 68 | Married | Masters in Engineering |
| s-16 | 3 | 71 | Married | Chartered Accountant |
| s-19 | 3 | 74 | Married | Grade 12 |
| s-21 | 3 | 72 | Married | Senior Accountant |
| s-23 | 3 | 81 | Married | Baccalaureate in Engineering |
| s-27 | 3 | 66 | Married | Grade 12 |
| s-28 | 3 | 82 | Single | Grade 6 |
| s-29 | 3 | 73 | Married | Diploma in Engineering |
| s-30 | 3 | 73 | Married | Baccalaureate in Engineering |
| s-31 | 3 | 81 | Married | Baccalaureate in Engineering |
| s-34 | 3 | 74 | Married | Baccalaureate in Engineering |

Note. NYHA = New York Heart Association classification level.

The mean age of all subjects is 69.7 years with a range of 24 to 86 years.

## Cardiovascular Assessment Findings

Cardiovascular assessments were conducted on all 40 subjects. The NYHA classification of all subjects was confirmed. Thirty-seven subjects had stable CHF symptoms during the previous three months. No changes in medications were identified. Although three subjects (7.5%) had unstable CHF symptoms, their NYHA classification remained the same. The physical symptom changes in these three subjects, s-17, s-21, and s-29, with unstable CHF are described below.

Subject s -17 This 75-year old woman was classified as NYHA 3. For the previous two days, she had noticed increasing shortness of breath on exertion and fatigue. Her weight had increased by two pounds since her last clinic visit a month earlier. She did not have paroxysmal nocturnal dyspnea and she could walk up to half a block without feelings of fatigue or shortness of breath. Her vital signs were within normal range and a previously documented systolic murmur was heard at the apex of the heart. Auscultation of the lungs revealed fine crepitations in her lower lobes bilaterally, at expiration. There were no signs of peripheral edema, the internal jugular veins were at normal level, and the liver was not palpable. In spite of the changes in signs and symptoms this subject remained in NYHA 3.

Subject s-21 This 72-year old man had NYHA 3 symptoms of CHF when initially classified. Following this, he improved to NYHA 2 after an exercise program and changes in his medications. This assessment was conducted a month after his last clinic visit. He reported feeling "OK today" but reported an increase in shortness of breath on exertion, and fatigue on exertion and at rest during the past

three weeks. Other symptoms included getting up three or four times at night with shortness of breath, feeling bloated, and poor appetite. His vital signs were within normal range. A previously documented systolic murmur was heard at the apex of the heart and his lungs sounded clear. There was no peripheral edema and his jugular veins were not distended. His weight had increased by one pound since his previous visit. His symptomatology indicated a reversion to NYHA 3, consistent with his initial classification.

Subject s-29 This 73-year old man had stable CHF symptoms corresponding to NYHA 2 for several months, but was classified for this study as NYHA 3 because of deterioration of his symptomatology. In spite of close follow-up and several changes in his medications, his symptoms did not improve. During this assessment, his blood pressure was low but his other vital signs were within normal range. A previously documented systolic murmur was heard at the apex of the heart, but no other abnormal heart sounds were present. His lungs sounded clear. There were no signs of peripheral edema, his liver was not palpable, and the internal jugular veins were not distended. He had lost four pounds during the preceding week. Although on the day of the study assessment he was feeling better than the previous week, he continued to feel fatigued at rest and experienced shortness of breath on minimal exertion. These symptoms corresponded to NYHA 3.

## Depression Assessment Findings

Each subject was assessed for depression using the BDI and the SCID-DES. The BDI findings are presented first, followed by those of the SCID-DES and lastly, the concordance and areas of disagreement between the BDI and SCID-DES findings.

### BDI Depression Assessment Findings

Subjects are classified into three categories: (a) clinically depressed (scores of 13 or above), (b) depressive symptomatology (scores ranging from 1 to 12), and (c) no depressive symptomatology (score of 0). Each subject's BDI depression classification is presented in Table 4. As can be seen, seven of the 40 subjects are classified as clinically depressed for an overall prevalence rate of 17.5%. The average age of the 5 depressed female subjects is 70 years. The average age of the 2 depressed male subjects is 72 years.

A summary of the BDI depression classifications for each subject group is presented in Table 5 according to each NYHA classification. Of the seven subjects identified as clinically depressed, three are female NYHA 2 subjects (30%), two are female NYHA 3 subjects (20%), none are male NYHA 2 subjects (0%), and two are male NYHA 3 subjects (20%). Based on scores of 1 to 12, 28 subjects are classified with depressive symptoms. This includes seven female NYHA 2 subjects (70%), six female NYHA 3 subjects (60%), eight male NYHA 2 subjects (80%), and seven male NYHA 3 subjects (70%). Of the five subjects that reported no depressive

Table 4

Classification of Subjects According to BDI Scores

| | Female Subjects | | Male Subjects | |
|---|---|---|---|---|
| Depression Classification | NYHA 2 | NYHA 3 | NYHA 2 | NYHA 3 |
| Clinically Depressed (BDI ≥ 13) | s-1<br>s-3<br>s-11 | s-17<br>s-20 | | s-16<br>s-29 |
| Depressive Symptoms (BDI = 1-12) | s-2<br>s-4<br>s-9<br>s-10<br>s-12<br>s-15<br>s-18 | s-5<br>s-6<br>s-7<br>s-8<br>s-24<br>s-36 | s-13<br>s-14<br>s-25<br>s-32<br>s-33<br>s-35<br>s-37<br>s-38 | s-19<br>s-21<br>s-23<br>s-27<br>s-28<br>s-30<br>s-34 |
| No Depressive Symptoms (BDI = 0) | | s-22<br>s-26 | s-39<br>s-40 | s-31 |
| Total Subjects | 10 | 10 | 10 | 10 |

Note. NYHA = New York Heart Association classification level.

Table 5

Summary of BDI Findings

| | Female Subjects | | | | Male Subjects | | | |
|---|---|---|---|---|---|---|---|---|
| | NYHA 2 | | NYHA 3 | | NYHA 2 | | NYHA 3 | |
| Depression Classification | n | % | n | % | n | % | n | % |
| Clinically Depressed | 3 | 30 | 2 | 20 | 0 | 0 | 2 | 20 |
| Depressive Symptoms | 7 | 70 | 6 | 60 | 8 | 80 | 7 | 70 |
| No Depressive Symptoms | 0 | 0 | 2 | 20 | 2 | 20 | 1 | 10 |
| Total Subjects | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 |

Note. NYHA = New York Heart Association classification level.

symptoms, two are female NYHA 3 subjects (20%), two are male NYHA 2 subjects (20%), and one is a male NYHA 3 subject (10%).

SCID-DES Depression Assessment Findings

Each subject was categorized into one of three classifications according to the clinical nurse researcher's rating of the subject's responses to the questions on the SCID-DES. The classifications are: (a) meet the *DSM-IV* criteria for an MDE, (b) have depressive symptoms but not of sufficient number or duration to meet the *DSM-IV* criteria for an MDE, and (c) no evidence of depressive symptoms. Each subject's SCID-DES depression classification is presented in Table 6. As can be seen, 6 of the 40 subjects meet the *DSM-IV* (1994) criteria for an MDE for an overall prevalence rate of 15%. The average age of the four depressed female subjects is 68.75 years. The average age of the two depressed male subjects is 72 years.

A summary of the SCID-DES depression classifications according to each NYHA classification is presented in Table 7. Three female NYHA 2 subjects (30%), one female NYHA 3 subject (10%), no male NYHA 2 subjects (0%), and two male NYHA 3 subjects (20%) meet the *DSM-IV* criteria for an MDE. Two subjects are rated as having some depressive symptoms but not of sufficient number or duration to meet the *DSM-IV* criteria for an MDE. Of these, one is a female NYHA 2 subject (10%) and one is a male NYHA 3 subject (10%). In addition, 32 subjects report no depressive symptomatology. Of these, 6 are female NYHA 2 subjects (60%), 9 are

Table 6

Classification of Subjects According to Rating of SCID-DES Responses

| | Female Subjects | | Male Subjects | |
|---|---|---|---|---|
| Depression Classification | NYHA 2 | NYHA 3 | NYHA 2 | NYHA 3 |
| Meet *DSM-IV* Criteria for an MDE | s-1<br>s-3<br>s-11 | s-20 | | s-21<br>s-29 |
| Depressive Symptoms | s-9 | | | s-16 |
| No Depressive Symptoms | s-2<br>s-4<br>s-10<br>s-12<br>s-15<br>s-18 | s-5<br>s-6<br>s-7<br>s-8<br>s-17<br>s-22<br>s-24<br>s-26<br>s-36 | s-13<br>s-14<br>s-25<br>s-32<br>s-33<br>s-35<br>s-37<br>s-38<br>s-39<br>s-40 | s-19<br>s-23<br>s-27<br>s-28<br>s-30<br>s-31<br>s-34 |
| Total Subjects | 10 | 10 | 10 | 10 |

Note. NYHA = New York Heart Association classification level. MDE = Major Depressive Episode.

Table 7

Summary of SCID-DES Ratings

| | Female Subjects | | | | Male Subjects | | | |
|---|---|---|---|---|---|---|---|---|
| | NYHA 2 | | NYHA 3 | | NYHA 2 | | NYHA 3 | |
| Depression Classification | n | % | n | % | n | % | n | % |
| Meet *DSM-IV* Criteria for MDE | 3 | 30 | 1 | 10 | 0 | 0 | 2 | 20 |
| Depressive Symptoms | 1 | 10 | 0 | 0 | 0 | 0 | 1 | 10 |
| No Depressive Symptoms | 6 | 60 | 9 | 90 | 10 | 100 | 7 | 70 |
| Total Subjects | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 |

Note. NYHA = New York Heart Association classification level. MDE = Major Depressive Episode.

female NYHA 3 subjects (90%), 10 are male NYHA subjects (100%), and 7 are male NYHA 3 subjects (70%).

Reliability. Inter-rater reliability was calculated on all of the depression criteria ratings on three randomly selected subjects (s-22, female NYHA 3 subject; s-32, s-40, male NYHA 2 subjects) during the course of the study. These reliability ratings were obtained as follows. First, a nurse-psychologist interviewed each patient, using an unstructured clinical interview based on *DSM-IV* criteria for an MDE. Then the clinical nurse researcher used the SCID-DES to assess the same patients. The clinical nurse researcher was blinded to the results of the nurse-psychologist's assessment. Following these diagnostic interviews inter-rater agreement was attained on each *DSM-IV* depressive symptom criteria.

## Concordance of the BDI and the SCID-DES Assessment Findings

The concordance between the SCID-DES and BDI assessment findings are presented in this section. These concordance findings are presented by gender according to the NYHA classification.

### Concordance of the BDI and the SCID-DES in Female Subjects

The findings of the BDI and the SCID-DES assessment methods with female subjects are presented in Table 8. As shown, there is agreement in four of the five cases. The agreement observed between the BDI and the SCID-DES in the

assessment of MDE in female NYHA 2 subjects is 100% and in female NYHA 3 subjects is 50%.

Table 8

Assessment Findings of the BDI and the SCID-DES in Female Subjects

| Subject | NYHA Class | BDI Assessment | SCID-DES Assessment |
|---|---|---|---|
| s-1 | 2 | CD | CD |
| s-3 | 2 | CD | CD |
| s-11 | 2 | CD | CD |
| s-17 | 3 | CD | NCD |
| s-20 | 3 | CD | CD |

Note. NYHA = New York Heart Association classification level. BDI = Beck Depression Inventory. SCID-DES = Structured Clinical Interview for the *DSM-IV*, Depressive Episode Section. CD = clinically depressed. NCD = not clinically depressed.

Concordance of the BDI and the SCID-DES in Male Subjects

The findings of the BDI and SCID-DES assessment methods in male NYHA 3 subjects are presented in Table 9. The agreement between these methods in male NYHA 3 subjects is 33%. No male NYHA 2 subjects (0%) were identified as clinically depressed by either the BDI or the SCID-DES for an agreement of 100%.

Table 9

Assessment Findings of the BDI and the SCID-DES in Male Subjects

| Subject | NYHA Class | BDI Assessment | SCID-DES Assessment |
|---|---|---|---|
| s-16 | 3 | CD | NCD |
| s-21 | 3 | NCD | CD |
| s-29 | 3 | CD | CD |

Note. NYHA = New York Heart Association classification level. BDI = Beck Depression Inventory. SCID-DES = Structured Clinical Interview for the *DSM-IV*, Depressive Episode Section. CD = clinically depressed. NCD = not clinically depressed.

## Agreements

The agreement between the BDI and the SCID-DES for male and female NYHA 2 subjects is 100%. The agreement between the BDI and the SCID-DES for female NYHA 3 subjects is 50% and for male NYHA 3 subjects is 33%. The overall agreement between the BDI and the SCID-DES in the assessment of clinically depressed subjects is 70.75%.

## Disagreements

One male NYHA 3 subject (s-16) was identified as clinically depressed with the BDI self-report score but not by the SCID-DES rating. A second male NYHA 3 subject (s-21) was identified as clinically depressed by the SCID-DES rating but not by the BDI self-report score. One female NYHA 3 subject (s-17) was identified as clinically depressed with the BDI self-report score but not by the SCID-DES rating.

## Depressive Symptoms According to the BDI

This section presents the somatic and non-somatic BDI symptom scores reported by the subjects. The BDI items were divided into 5 somatic and 16 non-somatic symptoms. The somatic symptoms are: (a) sleep disturbance, (b) fatigability, (c) loss of appetite, (d) weight loss, and (e) loss of libido. The non-somatic symptoms are: (a) mood, (b) pessimism, (c) sense of failure, (d) lack of satisfaction, (e) guilty feeling, (f) sense of punishment, (g) self-hate, (h) self-accusations, (i) self-punitive wishes, (j) crying spells, (k) irritability, (l) social withdrawal, (m) indecisiveness, (n) body image, (o) work inhibition, and (p) somatic preoccupation.

The somatic and non-somatic BDI symptoms reported by the clinically depressed subjects are presented first, followed by a presentation of the somatic and non-somatic BDI symptoms of the non-clinically depressed subjects reporting depressive symptoms. As will be noted, patterns are identified among subjects according to gender and NYHA classification, and a comparison between somatic and non-somatic symptom scores is included.

### Clinically Depressed Subjects: Somatic and Non-Somatic Symptoms

Table 10 presents the somatic and non-somatic BDI item scores, and depression severity of female NYHA 2 and NYHA 3 subjects identified as having an MDE by the BDI.

Table 10

BDI Item Scores and Depression Severity of Female Subjects Identified as Clinically Depressed

| Subjects (n = 5) | NYHA Class | BDI Scores: Somatic Items | BDI Scores: Non-Somatic Items | BDI Scores: Total BDI Score | Depression Severity |
|---|---|---|---|---|---|
| s-1 | 2 | 3 | 14 | 17 | Mild to Moderate |
| s-3 | 2 | 6 | 16 | 22 | Moderate to Severe |
| s-11 | 2 | 4 | 14 | 18 | Mild to Moderate |
| s-17 | 3 | 3 | 10 | 13 | Mild to Moderate |
| s-20 | 3 | 4 | 19 | 23 | Moderate to Severe |

Note. BDI = Beck Depression Inventory. NYHA = New York Heart Association classification level. Depression severity based on BDI scores: 0 - 9 = None to Minimal; 10 - 18 = Mild to Moderate; 19 - 29 = Moderate to Severe; 30 - 63 = Severe.

As presented in Table 10, the scores on somatic BDI items of female subjects identified as clinically depressed range from 3 to 6, and the scores on non-somatic BDI items range from 10 to 19. The total BDI scores for these subjects range from 13 to 23. As can be seen, the non-somatic symptom scores outweigh somatic symptom scores in each of the female subjects identified as having an MDE by the BDI.

Using these total BDI scores, depression severity was determined as follows. Two female NYHA 2 subjects (20%) and one female NYHA 3 subject (10%) are classified as having "mild to moderate" depression. One female NYHA 2 subject

(10%) and one female NYHA 3 subject (10%) are classified as having "moderate to severe" depression.

Table 11 presents the overall BDI scores of the somatic and non-somatic items, and depression severity of the male NYHA 3 subjects identified as clinically depressed by the BDI. The scores on the somatic items of these male subjects are 3 or 8, and the scores on non-somatic items are 13 or 17. The total BDI scores are 20 and 21. As can be seen, the non-somatic symptom scores outweigh somatic symptom scores in both male subjects identified as having an MDE by the BDI.

Table 11

BDI Item Scores and Depression Severity of Male Subjects Identified as Clinically Depressed

| | | BDI Scores | | | |
|---|---|---|---|---|---|
| Subjects (n = 2) | NYHA Class | Somatic Items | Non-Somatic Items | Total BDI Score | Depression Severity |
| s-16 | 3 | 8 | 13 | 21 | Moderate to Severe |
| s-29 | 3 | 3 | 17 | 20 | Moderate to Severe |

Note. BDI = Beck Depression Inventory. NYHA = New York Heart Association classification level. Depression severity classification based on BDI scores: 0 - 9 = None to Minimal; 10 - 18 = Mild to Moderate; 19 - 29 = Moderate to Severe; 30 - 63 = Severe.

The depression severity of the two male NYHA 3 subjects (20%) found clinically depressed by the BDI is "moderate to severe".

Somatic symptoms. The specific somatic depression symptoms and symptom severity ratings for these symptoms reported by female NYHA 2 and NYHA 3 subjects identified as clinically depressed by the BDI are presented in Table 12.

As can be noted from Table 12: (a) all clinically depressed female NYHA 2 and NYHA 3 subjects reported sleep disturbance and fatigability but with differing levels of severity; (b) no female NYHA 3 subject with clinical depression reported loss of appetite, weight loss, or loss of libido; and (c) no clinically depressed female subject reported experiencing all the BDI somatic symptoms.

Table 13 presents the specific somatic depression symptoms and symptom severity ratings reported by male NYHA 3 subjects identified as clinically depressed by the BDI. As can be seen from Table 13, both male NYHA 3 subjects identified as clinically depressed by the BDI reported fatigability, loss of appetite, and loss of libido, but with differing levels of severity. One male subject reported experiencing all the BDI somatic symptoms.

Table 12

Somatic Symptom Severity Ratings Reported by Female Subjects Identified as Clinically Depressed

| | BDI Symptom Severity Rating by Subject | | | | |
|---|---|---|---|---|---|
| | NYHA 2 Subjects | | | NYHA 3 Subjects | |
| Somatic Symptom | s-1 | s-3 | s-11 | s-17 | s-20 |
| Sleep Disturbance | 1 | 1 | 1 | 1 | 1 |
| Fatigability | 1 | 1 | 2 | 2 | 3 |
| Loss of Appetite | 1 | 0 | 1 | 0 | 0 |
| Weight Loss | 0 | 1 | 0 | 0 | 0 |
| Loss of Libido | 0 | 3 | 0 | 0 | 0 |
| Total | 3 | 6 | 4 | 3 | 4 |

Note. BDI = Beck Depression Inventory. NYHA = New York Heart Association classification level. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

Table 13

Somatic Symptom Severity Ratings Reported by Male NYHA 3 Subjects Identified as Clinically Depressed

| | BDI Symptom Severity Rating by Subject | |
|---|---|---|
| Somatic Symptom | s-16 | s-29 |
| Sleep Disturbance | 1 | 0 |
| Fatigability | 1 | 1 |
| Loss of Appetite | 2 | 1 |
| Weight Loss | 1 | 0 |
| Loss of Libido | 3 | 1 |
| Total | 8 | 3 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

Non-somatic symptoms. The specific non-somatic symptoms of depression and their severity reported by female NYHA 2 and NYHA 3 subjects identified as clinically depressed by the BDI are presented in Table 14.

Table 14

Non-Somatic Symptom Severity Ratings Reported by Female Subjects Identified as Clinically Depressed

| | BDI Symptom Severity Rating by Subject | | | | |
|---|---|---|---|---|---|
| | NYHA 2 Subjects | | | NYHA 3 Subjects | |
| Non-Somatic Symptom | s-1 | s-3 | s-11 | s-17 | s-20 |
| Mood | 1 | 1 | 0 | 0 | 2 |
| Pessimism | 1 | 1 | 1 | 0 | 1 |
| Sense of Failure | 0 | 0 | 1 | 2 | 1 |
| Lack of Satisfaction | 1 | 1 | 1 | 1 | 3 |
| Guilty Feeling | 1 | 0 | 1 | 1 | 0 |
| Sense of Punishment | 3 | 0 | 1 | 0 | 3 |
| Self-hate | 0 | 0 | 1 | 1 | 0 |
| Self-accusations | 0 | 1 | 1 | 2 | 1 |
| Self-punitive Wishes | 0 | 0 | 0 | 0 | 0 |
| Crying Spells | 1 | 3 | 0 | 0 | 2 |
| Irritability | 1 | 3 | 1 | 0 | 1 |
| Social withdrawal | 2 | 0 | 0 | 0 | 0 |
| Indecisiveness | 0 | 2 | 1 | 1 | 2 |
| Body image | 0 | 2 | 2 | 0 | 0 |
| Work inhibition | 2 | 2 | 2 | 2 | 2 |
| Somatic preoccupation | 1 | 0 | 1 | 0 | 1 |
| Total | 14 | 16 | 14 | 10 | 19 |

Note. BDI = Beck Depression Inventory. NYHA = New York Heart Association classification level. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

As can be seen in Table 14, the following patterns in non-somatic symptoms of depression are identified in female subjects found clinically depressed by the BDI: (a) all three clinically depressed female NYHA 2 subjects reported experiencing pessimism, lack of satisfaction, irritability, and work inhibition and had no self-punitive wishes; and (b) the two clinically depressed female NYHA 3 subjects reported experiencing sense of failure, lack of satisfaction, self-accusations, indecisiveness, and work inhibition; and reported no symptoms of self-punitive wishes, social withdrawal, and body image concerns.

The specific non-somatic depression symptoms and symptom severity ratings reported by male NYHA 3 subjects identified as having an MDE by the BDI are presented in Table 15. Both male NYHA 3 subjects identified as clinically depressed reported mood, pessimism, lack of satisfaction, self-accusations, irritability, indecisiveness, body image, work inhibition, and somatic preoccupation symptoms, but with some variation in the degree of severity.

All clinically depressed male and female subjects reported experiencing lack of satisfaction and work inhibition.

Table 15

Non-Somatic Symptom Severity Ratings Reported by Male NYHA 3 Subjects Identified as Clinically Depressed

| Non-Somatic Symptom | BDI Symptom Severity Rating by Subject | |
|---|---|---|
| | s-16 | s-29 |
| Mood | 1 | 1 |
| Pessimism | 1 | 1 |
| Sense of failure | 0 | 1 |
| Lack of satisfaction | 1 | 1 |
| Guilty feeling | 0 | 1 |
| Sense of punishment | 0 | 0 |
| Self-hate | 0 | 1 |
| Self-accusations | 1 | 1 |
| Self-punitive wishes | 0 | 1 |
| Crying spells | 0 | 1 |
| Irritability | 1 | 1 |
| Social withdrawal | 1 | 0 |
| Indecisiveness | 1 | 1 |
| Body image | 2 | 1 |
| Work inhibition | 2 | 3 |
| Somatic preoccupation | 2 | 2 |
| Total | 13 | 17 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

Non-Clinically Depressed Subjects: Somatic and Non-Somatic Symptoms

The results of subjects with BDI self-report scores of 1 to 12 are presented in this subsection. A total of 28 of the 40 subjects (70%) reported experiencing depressive symptoms, but not having an MDE.

Thirteen of the 15 non-clinically depressed female subjects reported experiencing depressive symptoms. The total somatic and non-somatic BDI items scores and depression severity of the seven female NYHA 2 subjects (70%) and the six female NYHA 3 subjects (60%) who reported depressive symptoms are presented in Table 16.

The total BDI scores for somatic symptom severity range from 0 to 5, and the total BDI scores for non-somatic symptom severity range from 0 to 9 points. The total BDI scores of female subjects identified as having some symptoms of depression range from 2 to 11. One female NYHA 2 subject is identified as having "mild to moderate" depression. Six female NYHA 2 subjects and six female NYHA 3 subjects are identified as having "none to minimal" depression.

Non-somatic symptom scores outweigh somatic symptom scores for 9 of the 13 subjects. For one female NYHA 2 subject and two female NYHA 3 subjects, the somatic symptom scores are higher. For one female NYHA 3 subject, the somatic and non-somatic symptom scores are equal.

Table 16

Somatic and Non-Somatic Item Scores and Depression Severity of Female Subjects with BDI Scores of 1-12

| Subject (n=13) | NYHA Class | BDI Scores | | | Depression Severity |
|---|---|---|---|---|---|
| | | Somatic Items | Non-Somatic Items | Total BDI Score | |
| s-2 | 2 | 2 | 9 | 11 | Mild to Moderate |
| s-4 | 2 | 2 | 7 | 9 | None to Minimal |
| s-9 | 2 | 2 | 6 | 8 | None to Minimal |
| s-10 | 2 | 2 | 6 | 8 | None to Minimal |
| s-12 | 2 | 1 | 2 | 3 | None to Minimal |
| s-15 | 2 | 2 | 0 | 2 | None to Minimal |
| s-18 | 2 | 0 | 3 | 3 | None to Minimal |
| s-5 | 3 | 1 | 4 | 5 | None to Minimal |
| s-6 | 3 | 2 | 0 | 2 | None to Minimal |
| s-7 | 3 | 5 | 2 | 7 | None to Minimal |
| s-8 | 3 | 1 | 1 | 2 | None to Minimal |
| s-24 | 3 | 0 | 4 | 4 | None to Minimal |
| s-36 | 3 | 3 | 6 | 9 | None to Minimal |

Note. NYHA = New York Heart Association classification level. BDI = Beck Depression Inventory. Depression severity classification based on BDI scores: 0 - 9 = None to Minimal; 10 - 18 = Mild to Moderate; 19 - 29 = Moderate to Severe; 30 - 63 = Severe.

Fifteen of the 18 non-clinically depressed male subjects reported experiencing some symptoms of depression. The total somatic and non-somatic BDI items scores and depression severity of the eight male NYHA 2 subjects (80%) and the seven male NYHA 3 subjects (70%) who reported depressive symptoms are presented in Table 17.

Table 17

Somatic and Non-Somatic Item Scores and Depression Severity of Male Subjects with BDI Scores of 1-12

| Subject (n=15) | NYHA Class | BDI Scores: Somatic Items | BDI Scores: Non-Somatic Items | BDI Scores: Total BDI Score | Depression Severity |
|---|---|---|---|---|---|
| s-13 | 2 | 0 | 11 | 11 | Mild to Moderate |
| s-14 | 2 | 2 | 0 | 2 | None to Minimal |
| s-25 | 2 | 0 | 1 | 1 | None to Minimal |
| s-32 | 2 | 1 | 6 | 7 | None to Minimal |
| s-33 | 2 | 0 | 2 | 2 | None to Minimal |
| s-35 | 2 | 0 | 1 | 1 | None to Minimal |
| s-37 | 2 | 3 | 3 | 6 | None to Minimal |
| s-38 | 2 | 0 | 1 | 1 | None to Minimal |
| s-19 | 3 | 1 | 2 | 3 | None to Minimal |
| s-21 | 3 | 5 | 4 | 9 | None to Minimal |
| s-23 | 3 | 0 | 11 | 11 | Mild to Moderate |
| s-27 | 3 | 0 | 1 | 1 | None to Minimal |
| s-28 | 3 | 2 | 7 | 9 | None to Minimal |
| s-30 | 3 | 0 | 1 | 1 | None to Minimal |
| s-34 | 3 | 0 | 1 | 1 | None to Minimal |

Note. NYHA = New York Heart Association classification level. BDI = Beck Depression Inventory. Depression severity classification based on BDI scores: 0 - 9 = None to Minimal; 10 - 18 = Mild to Moderate; 19 - 29 = Moderate to Severe; 30 - 63 = Severe.

The total BDI scores for somatic symptom severity range from 0 to 5, and the total BDI scores for non-somatic symptom severity range from 1 to 11. The total BDI scores of male subjects who reported depressive symptoms range from 1 to 11.

One male NYHA 2 subject and one male NYHA 3 subject scored 11 points in non-somatic symptoms and are identified with "mild to moderate" depression. Seven male NYHA 2 subjects and six male NYHA 3 subjects are identified as having "none to minimal" depression.

Non-somatic symptom scores outweigh somatic symptom scores for 12 of the 15 subjects. For one male NYHA 2 subject and one male NYHA 3 subject, the somatic symptom scores are higher. For one male NYHA 2 subject, the somatic and non-somatic symptom scores are equal.

Somatic symptoms. The specific somatic depression symptoms and symptom severity reported by female subjects as having depressive symptoms are presented in Table 18 for NYHA 2 subjects and Table 19 for NYHA 3 subjects.

Table 18

Somatic Symptom Severity Ratings Reported by Female NYHA 2 Subjects with BDI Scores of 1-12

| | BDI Symptom Severity Rating by Subject | | | | | | |
|---|---|---|---|---|---|---|---|
| Somatic Symptom | s-2 | s-4 | s-9 | s-10 | s-12 | s-15 | s-18 |
| Sleep Disturbance | 1 | 0 | 0 | 2 | 1 | 0 | 0 |
| Fatigability | 1 | 2 | 1 | 0 | 0 | 1 | 0 |
| Loss of Appetite | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Weight Loss | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Loss of Libido | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 2 | 2 | 2 | 2 | 1 | 1 | 0 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

Table 19

Somatic Symptom Severity Ratings Reported by Female NYHA 3 Subjects with BDI Scores of 1-12

| | BDI Symptom Severity Rating by Subject | | | | | |
|---|---|---|---|---|---|---|
| Somatic Symptom | s-5 | s-6 | s-7 | s-8 | s-24 | s-36 |
| Sleep Disturbance | 0 | 1 | 1 | 1 | 0 | 1 |
| Fatigability | 1 | 1 | 1 | 0 | 0 | 1 |
| Loss of Appetite | 0 | 0 | 0 | 0 | 0 | 0 |
| Weight Loss | 0 | 0 | 0 | 0 | 0 | 0 |
| Loss of Libido | 0 | 0 | 3 | 0 | 0 | 1 |
| Total | 1 | 2 | 5 | 1 | 0 | 3 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

All female NYHA 2 subjects reported no symptoms of weight loss or loss of libido; and all female NYHA 3 subjects reported no symptoms of loss of appetite or weight loss.

Table 20 presents somatic depression symptoms and their severity as reported by male NYHA 2 subjects with depressive symptoms. Table 21 presents the same information for male NYHA 3 subjects.

As can be seen in Tables 20 and 21 all male NYHA 2 and NYHA 3 subjects reported no symptoms of weight loss. As well, all male NYHA 2 subjects did not report any loss of appetite.

Table 20

Somatic Symptom Severity Ratings Reported by Male NYHA 2 Subjects with BDI Scores of 1-12

| | BDI Symptom Severity Rating by Subject | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Somatic Symptom | s-13 | s-14 | s-25 | s-32 | s-33 | s-35 | s-37 | s-38 |
| Sleep Disturbance | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Fatigability | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Loss of Appetite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Weight Loss | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Loss of Libido | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Total | 0 | 2 | 0 | 1 | 0 | 0 | 3 | 0 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

Table 21

Somatic Symptom Severity Ratings Reported by Male NYHA 3 Subjects with BDI Scores of 1-12

| | BDI Symptom Severity Rating by Subject | | | | | | |
|---|---|---|---|---|---|---|---|
| Somatic Symptom | s-19 | s-21 | s-23 | s-27 | s-28 | s-30 | s-34 |
| Sleep Disturbance | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Fatigability | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Loss of Appetite | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Weight Loss | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Loss of Libido | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Total | 1 | 5 | 0 | 0 | 2 | 0 | 0 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

Non-somatic symptoms. Non-somatic symptoms of depression and their severity reported by female NYHA 2 and NYHA 3 subjects are presented in Tables 22 and 23 respectively.

Table 22

Non-Somatic Symptom Severity Ratings Reported by Female NYHA 2 Subjects with BDI Scores of 1-12

| | BDI Symptom Severity Rating by Subject | | | | | | |
|---|---|---|---|---|---|---|---|
| Non-Somatic Symptom | s-2 | s-4 | s-9 | s-10 | s-12 | s-15 | s-18 |
| Mood | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pessimism | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| Sense of failure | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Lack of satisfaction | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Guilty feeling | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Sense of punishment | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Self-hate | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Self-accusations | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Self-punitive wishes | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Crying spells | 1 | 0 | 3 | 0 | 0 | 0 | 0 |
| Irritability | 0 | 0 | 0 | 0 | 1 | 0 | 3 |
| Social withdrawal | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Indecisiveness | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Body image | 2 | 1 | 0 | 1 | 0 | 0 | 0 |
| Work inhibition | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Somatic preoccupation | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| Total | 9 | 7 | 6 | 6 | 2 | 3 | 3 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

Table 23

Non-Somatic Symptom Severity Ratings Reported by Female NYHA 3 Subjects with BDI Scores of 1-12

| | BDI Symptom Severity Rating by Subject | | | | | |
|---|---|---|---|---|---|---|
| Non-Somatic Symptom | s-5 | s-6 | s-7 | s-8 | s-24 | s-36 |
| Mood | 1 | 0 | 0 | 1 | 0 | 0 |
| Pessimism | 0 | 0 | 1 | 0 | 0 | 0 |
| Sense of failure | 0 | 0 | 0 | 0 | 0 | 0 |
| Lack of satisfaction | 0 | 0 | 1 | 0 | 1 | 1 |
| Guilty feeling | 0 | 0 | 0 | 0 | 0 | 0 |
| Sense of punishment | 0 | 0 | 0 | 0 | 0 | 0 |
| Self-hate | 2 | 0 | 0 | 0 | 0 | 0 |
| Self-accusations | 0 | 0 | 0 | 0 | 0 | 0 |
| Self-punitive wishes | 0 | 0 | 0 | 0 | 0 | 0 |
| Crying spells | 1 | 0 | 0 | 0 | 0 | 1 |
| Irritability | 0 | 0 | 0 | 0 | 3 | 1 |
| Social withdrawal | 0 | 0 | 0 | 0 | 0 | 0 |
| Indecisiveness | 0 | 0 | 0 | 0 | 0 | 0 |
| Body image | 0 | 0 | 0 | 0 | 0 | 0 |
| Work inhibition | 0 | 0 | 0 | 0 | 0 | 1 |
| Somatic preoccupation | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 4 | 0 | 2 | 1 | 4 | 6 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

As can be seen in Tables 22 and 23 the following results patterns in non-somatic symptoms were identified in female subjects found with BDI scores from 1 to 12: (a) all female NYHA 2 subjects reported no symptoms of self-punitive wishes and indecisiveness; and (b) all female NYHA 3 subjects reported no symptoms of

sense of failure, guilty feeling, sense of punishment, self-accusations, self-punitive wishes, social withdrawal, indecisiveness, or body image.

The specific non-somatic depression symptoms and their severity reported by male NYHA 2 and NYHA 3 subjects are presented in Tables 24 and 25 respectively.

Table 24

Non-Somatic Symptom Severity Ratings Reported by Male NYHA 2 Subjects with BDI Scores of 1-12

| | BDI Symptom Severity Rating by Subject | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Non-Somatic Symptom | s-13 | s-14 | s-25 | s-32 | s-33 | s-35 | s-37 | s-38 |
| Mood | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pessimism | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sense of failure | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lack of satisfaction | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Guilty feeling | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sense of punishment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Self-hate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Self-accusations | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Self-punitive wishes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Crying spells | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Irritability | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Social withdrawal | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Indecisiveness | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 |
| Body image | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Work inhibition | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Somatic preoccupation | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Total | 11 | 0 | 1 | 6 | 2 | 1 | 3 | 1 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

Table 25

Non-Somatic Symptom Severity Ratings Reported by Male NYHA 3 Subjects with BDI Scores of 1-12

| | BDI Symptom Severity Rating by Subject | | | | | | |
|---|---|---|---|---|---|---|---|
| Non-Somatic Symptom | s-19 | s-21 | s-23 | s-27 | s-28 | s-30 | s-34 |
| Mood | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Pessimism | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sense of failure | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Lack of satisfaction | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Guilty feeling | 0 | 0 | 1 | 0 | 2 | 0 | 0 |
| Sense of punishment | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Self-hate | 0 | 0 | 1 | 0 | 2 | 0 | 0 |
| Self-accusations | 0 | 0 | 2 | 0 | 0 | 1 | 0 |
| Self-punitive wishes | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Crying spells | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Irritability | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Social withdrawal | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Indecisiveness | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Body image | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Work inhibition | 0 | 1 | 2 | 0 | 1 | 0 | 0 |
| Somatic preoccupation | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Total | 2 | 4 | 11 | 1 | 7 | 1 | 1 |

Note. BDI = Beck Depression Inventory. BDI Symptom Rating Scale: 0 = absent; 1 = mild; 2 = moderate; 3 = severe or persistent presence of symptom.

As can be seen in Tables 24 and 25, the following patterns in the non-somatic symptoms are identified in male subjects found with scores from 1 to 12: (a) all male NYHA 2 subjects had no symptoms of guilty feeling, sense of punishment, self-punitive wishes, and body image; and (b) all male NYHA 3 subjects had no

symptoms of pessimism, sense of punishment, self-punitive wishes, crying spells, or social withdrawal.

## Depressive Symptoms According to the SCID-DES

The depressive symptoms as rated by the clinical nurse researcher for the subjects meeting the *DSM-IV* criteria for an MDE, and for those subjects reporting fewer than five symptoms are presented.

### Symptom Rating Patterns of Subjects Meeting the *DSM-IV* Criteria for an MDE

The clinical symptom rating of the SCID-DES of female NYHA 2 and NYHA 3 subjects and male NYHA 3 subjects meeting the *DSM-IV* criteria for an MDE are presented in Table 26. No male NYHA 2 subjects meet these criteria.

As can be seen in Table 26, the following patterns are identified in those subjects meeting the *DSM-IV* criteria for an MDE: (a) all female NYHA 2 and NYHA 3 subjects are rated "threshold or true" for depressed mood, insomnia or hypersomnia, psychomotor agitation or retardation, and feeling of worthlessness or excessive or inappropriate guilt; (b) all male NYHA 3 subjects are rated "threshold or true" for psychomotor agitation or retardation, and feeling of worthlessness or excessive or inappropriate guilt; and (c) both male NYHA 3 subjects are rated "absent or false" for significant weight loss or gain.

It can be noted that one female NYHA 2 subject and one male NYHA 3 subject are rated "threshold or true" for recurrent thoughts of death.

Table 26

Symptom Rating of Subjects Meeting the *DSM-IV* Criteria for an MDE

| | Female Subjects | | | | Male Subjects | |
|---|---|---|---|---|---|---|
| | NYHA 2 | | | NYHA 3 | NYHA 3 | |
| SCID Symptoms | s-1 | s-3 | s-11 | s-20 | s-21 | s-29 |
| Depressed mood | 3 | 3 | 3 | 3 | 1 | 3 |
| Diminished interest or pleasure | ? | 3 | 3 | 3 | 3 | 1 |
| Significant weight loss or gain | 1 | 1 | 3 | 1 | 1 | 1 |
| Insomnia or hypersomnia | 3 | 3 | 3 | 3 | 3 | 1 |
| Psychomotor agitation or retardation | 3 | 3 | 3 | 3 | 3 | 3 |
| Fatigue or loss of energy | ? | 3 | 3 | 3 | 3 | 2 |
| Feelings of worthlessness or excessive or inappropriate guilt | 3 | 3 | 3 | 3 | 3 | 3 |
| Diminished ability to think or concentrate | 1 | 3 | 3 | 3 | 1 | 3 |
| Recurrent thoughts of death | 3 | 1 | 1 | 1 | 1 | 3 |

Note. NYHA = New York Heart Association classification level; SCID = Structured Clinical Interview for the *DSM-IV*. Response rating code: ? = inadequate information; 1 = absent or false; 2 = subthreshold; 3 = threshold or true.

Symptom Rating Pattern of Subjects with Less than Five Depressive Symptoms

Table 27 presents those subjects identified with some symptoms of depression but not of sufficient number or duration to meet the *DSM-IV* criteria for an MDE and the rating on each depression symptom according to the subject's response to the SCID-DES.

Table 27

Symptom Rating of Subjects with Less than Five Depressive Symptoms

| | Female Subject | Male Subject |
|---|---|---|
| | NYHA 2 | NYHA 3 |
| SCID-DES Symptoms | s-9 | s-16 |
| Depressed mood | 3 | 3 |
| Diminished interest or pleasure | 2 | 3 |
| Significant weight loss or gain | 1 | 1 |
| Insomnia or hypersomnia | 3 | 1 |
| Psychomotor agitation or retardation | 1 | 1 |
| Fatigue or loss of energy | 1 | 3 |
| Feelings of worthlessness or excessive or inappropriate guilt | 1 | ? |
| Diminished ability to think or concentrate | 1 | 1 |
| Recurrent thoughts of death | 1 | 1 |

Note. NYHA = New York Heart Association classification level; SCID-DES = Structured Clinical Interview for the *DSM-IV*, Depressive Episode Section. Response rating code: ? = inadequate information; 1 = absent or false; 2 = subthreshold; 3 = threshold or true.

One female NYHA 2 subject (10%) and one male NYHA 3 subject (10%) are identified by the SCID-DES with some depressive symptoms but not of sufficient number or duration to meet the *DSM-IV* criteria for an MDE. No female NYHA 3 subjects and no male NYHA 2 subjects are identified in this category.

Depressed mood is rated for the female NYHA 2 subject and for the male NYHA 3 subject as "threshold or true". Diminished interest or pleasure is present in the female NYHA 2 subject, but not of sufficient intensity or duration (subthreshold), but it is rated as "threshold or true" in the male NYHA 3 subject.

Significant weight loss or gain, psychomotor agitation or retardation, diminished ability to think or concentrate, and recurrent thoughts of death were absent in both subjects. Feeling of worthlessness or excessive or inappropriate guilt was absent in the female NYHA 2 subject, but there was inadequate information from the male NYHA 3 subject to rate this symptom.

# CHAPTER 5

# SUMMARY AND DISCUSSION

The purpose of the study was to identify the optimal method of assessing depression in patients with CHF. The specific objectives of the study were to assess ambulatory male and female patients with CHF for depression using the BDI and the SCID-DES; to determine the prevalence and the severity of depression in these patients; and to determine which of these methods is the optimal method of assessing depression in ambulatory patients with CHF.

In this chapter, each of the objectives are addressed. This includes the overall findings of the study, the depression assessment process, the depression prevalence and severity in patients with CHF, and the methods of depression assessment. Depressive symptoms are examined. Strengths and limitations of the study follow. The implications of the study for clinical practice, with suggestions for clinical use, and a recommendation for future research are also addressed.

## Assessment Process

The first objective of this study was to assess ambulatory male and female patients with CHF with the BDI and the SCID-DES. In this section, the assessment process, including the cardiovascular assessment, is addressed.

A cardiovascular assessment and a depression assessment using the BDI and the SCID-DES were conducted by the same clinical nurse researcher on 40

randomly selected male and female subjects who met the inclusion criteria and attended the Heart Function Clinic of the University of Alberta Hospital. Thirty-six subjects chose to be assessed in their home and four subjects chose to be assessed in the outpatient clinic area of the hospital. An average of 55 minutes was required to complete the three assessment components on each subject.

Cardiovascular Assessment

Because of the awareness of the potential somatic symptom overlap between CHF and an MDE, a cardiovascular assessment was conducted on all subjects in order to confirm the NYHA classification. The structured process, following the Heart Function Clinic Flow Sheet for consistency, ensured that a thorough and systematic cardiovascular assessment was conducted on all subjects in order to confirm the NYHA classification status and stability of CHF symptoms. As well as providing data to confirm the NYHA classification level of the subjects, other somatic symptoms related to CHF were identified. An average of 20 minutes was required to complete this cardiovascular assessment.

Depression Assessment

The assessments of male and female ambulatory patients with CHF using the BDI and the SCID-DES were completed as planned. The interview with the SCID-DES, the first instrument used, took an average of 20 minutes to be conducted, and

the BDI took an average of 15 minutes for each subject to complete. Both instruments provided a structured, consistent method of assessment.

SCID-DES. Both the clinical nurse researcher and the subjects felt comfortable with the interview. The questions were easily understood by the subjects and the ratings were completed with confidence by the clinical nurse researcher.

Before proceeding with subject assessments, the clinical nurse researcher was rigorously trained by a nurse-psychologist in the use of this instrument. Although the clinical nurse researcher did not have extensive clinical experience and knowledge in psychiatry prior to commencing the study, she had extensive clinical experience in patient care in addition to an interest in the psychological and emotional aspects of patients with chronic illness. The SCID-DES ratings were accurate and thorough. These factors strongly support the reliability of the SCID-DES in this study.

BDI. To ensure that the subjects understood the process of completing the BDI, the clinical nurse researcher remained with the subject and read the instructions slowly and clearly prior to the subject answering the questionnaire. In order to minimize the potential depression and CHF symptom overlap, the clinical nurse researcher emphasized at least three times that the symptoms must describe the feeling over the past week, including the day of the interview. One of these times was prior to the initial question regarding somatic symptoms, "I can work as well as before" which refers to the somatic symptom of fatigue. The emphasis on the time frame cued the subject to recognize whether or not the symptom of fatigue and the other somatic symptoms were present for several weeks or months or just during the

last week prior to the assessment. A similar method is recommended in the clinical setting when using the BDI to assess depression in CHF patients.

Discussion

After the assessments were completed, those subjects with physical problems warranting additional medical attention were referred to appropriate medical services. Home Care nurses were contacted to increase the level of care provided for one subject, and 24-hour oxygen therapy was initiated for two subjects.

One male subject who was identified as clinically depressed by the BDI and one female subject identified as clinically depressed by both the BDI and the SCID accepted a referral to a clinical psychologist for counselling. The male subject was not found to be clinically depressed by the clinical psychologist. The female subject was diagnosed as clinically depressed by the clinical psychologist and was treated with psychotherapy until her symptoms of MDE improved. The other subjects who were identified as clinically depressed refused a referral to a clinical psychologist.

The depression assessment process as described in this study is appropriate for nurse clinicians who care for patients with CHF in outpatient clinics to incorporate in their practice. Although a cardiovascular assessment may be a routine practice by these nurses, the addition of the depression assessment presents some issues. The training required to use the SCID-DES is labour intensive and requires the expertise of a clinical psychologist. This may prevent some nurses from learning to use this method. As well, additional time is required to complete the BDI and the

SCID-DES. While this may increase the demands on nurses in the clinical setting, attention to the psychological issues would enhance the quality of life of the patients and lead to better outcomes of care, thereby maximizing the use of health care resources. With appropriate planning of time and further training in the use of the depression assessment instruments, nurse clinicians can incorporate the assessment of depression into the care protocol for patients with CHF.

Conclusion

The following conclusion is drawn from this section.

1. Depression assessment in ambulatory patients with CHF can be completed by nurse clinicians using the BDI and the SCID-DES. The clinician must be trained in the use of the SCID-DES.

## Prevalence and Severity of MDE in Ambulatory Patients with CHF

The second objective of this study was to determine the prevalence and the severity of depression in ambulatory male and female subjects with CHF. The prevalence rates of MDE in ambulatory patients with CHF are presented, followed by a comparison with the prevalence rates in the general population and with other medical illnesses. A comparison of the study results between genders and NYHA classes is made. The severity of MDE in these patients is also presented.

Depression Prevalence Rates

In this study, the overall prevalence rate of depression in ambulatory CHF NYHA 2 and NYHA 3 subjects is 17.5% using the BDI and 15% using the SCID-DES. As expected, these results are generally consistent with those of previous researchers; all of whom reported higher prevalence rates of MDE in patients with cardiac disease than those in the general population. However, a direct comparison between the results of this study and the results reported by other researchers is not possible because of the differences in depression assessment and study design parameters.

The prevalence rate of depression in 60 hospitalized patients with CHF is reported as 17% by Freedland et al. (1991) who used the Diagnostic Interview Schedule. Although this prevalence rate is slightly higher than the prevalence rate found in this study with the SCID-DES, these two methods compare in that both are structured interviews designed to make the diagnosis of depression according to *DSM* criteria. However, the subjects of the Freedland et al. study are more ill than the ambulatory subjects of this study. The age of hospitalized subjects was 70 years or older, while the age range of the ambulatory patients in NYHA 2 and NYHA 3 classifications was 24 to 86 years. While Freedland et al. report no significant differences in the prevalence rates of male and female patients, the results of this study indicate that twice as many female as male subjects have a clinical depression.

Comparison of Prevalence Rates between Genders and NYHA Classes

The results of this study suggest that women with CHF have a higher depression prevalence rate (BDI - 25%; SCID-DES - 20%) than men with CHF (BDI & SCID-DES - 10%), and women and men in the general population. In the general population, a higher prevalence of MDE in women (4.5% to 9.3%) than men (2.3% to 3.2%) is also reported (U.S. Department of Health and Human Services, 1993).

This study identified a higher prevalence rate of depression in female NYHA 2 subjects (BDI - 30%; SCID-DES - 30%) than in female NYHA 3 subjects (BDI - 20%; SCID-DES - 10%). More female NYHA 2 subjects (30%) than male NYHA 2 subjects (0%) were identified with clinical depression by both the BDI and the SCID-DES.

The BDI identified the same number of female and male NYHA 3 subjects (20% each) with clinical depression. However, the SCID-DES identified more male NYHA 3 subjects (20%) clinically depressed than female NYHA 3 subjects (10%). Both the BDI and the SCID-DES identified more male NYHA 3 subjects (20%) with clinical depression than male NYHA 2 subjects (0%).

Depression Severity in Clinically Depressed Subjects

Based on the BDI somatic and non-somatic symptom scores, the severity of the depression in two female NYHA 2 subjects (s-1 and s-11) was "mild to moderate", and in one NYHA 2 subject (s-3) was "moderate to severe". The

severity of depression in the two female NYHA 3 subjects ranged from "mild to moderate" (s-17) to "moderate to severe" (s-20) and the severity of depression in the two male NYHA 3 subjects (s-16 and s-29) was "moderate to severe."

When the somatic symptoms of depression are not considered, the two female NYHA 2 subjects and one female NYHA 3 subject with "mild to moderate" symptoms of depression and the female NYHA 3 subject with "moderate to severe" level of depression maintain this level. The depression level of severity of one female NYHA 2 subject and the two male NYHA 3 subjects changes from "moderate to severe" to "mild to moderate".

Discussion

While the overall prevalence rate of depression found in this study is higher than that (9.61%) found by Davis and Jensen (1988) using the same BDI cut-off score of 13, it is more consistent with that (14.9%) of Yingling et al. (1995) who used a higher BDI cut-off score (19). Frasure-Smith et al. (1995), using a BDI cut-off score of 10, identified 31% of patients post myocardial infarction with depression while in this study fewer subjects were identified with depression. Crowe et al. (1996), using a short form of the BDI with a lower cut-off score, only identified an MDE in 9% of hospitalized patients with acute myocardial infarction, and in 10% of these patients, who attended a rehabilitation program, at 41 weeks post acute myocardial infarction. In another study, Bornstein et al. (1993), using a BDI cut-off score of 15, identified 29% of HIV-seropositive male patients with an

MDE. This prevalence rate is higher than that found in the subjects with CHF of this study. Although Swanink et al. (1995) used a higher cut-off score (16) in patients with chronic fatigue syndrome, an MDE prevalence rate of 18.3% is more consistent with that of this study. Roca et al. (1996), who studied patients with scleroderma, report a higher prevalence rate (48.1%) of depression with cut-off score of 10, and 16.7% of depression with a cut-off score of 19. Despite a wide range of cut-off scores and the differences in populations studied, higher prevalence rates in patients post myocardial infarction or with chronic medical illnesses than in the general population have been documented.

While the SCID-DES results of this study are higher than those of Davis and Jensen (1988) in patients with myocardial infarction (5.76%) and Hantz et al. (1994) in patients with Parkinson's disease (2.7%), they are consistent with the results of Yingling et al. (1993) in patients with myocardial infarction (14.9%), Bornstein et al. (1993) in asymptomatic HIV-seropositive male patients (19%), and Moller et al. (1994) in moderately disabled patients with multiple sclerosis (16%). The slightly higher prevalence rate of depression identified by Freedland et al. (1991) may indicate that increased age and severity of clinical CHF symptoms increase the risk of depression in male and female patients with CHF.

The results of this study may indicate that the severity of CHF symptoms does not increase the likelihood of women developing clinical depression or depressive symptoms, as could be expected. More female NYHA 2 subjects than female NYHA 3 subjects presented with clinical depression.

However, the differences between the female and male prevalence rates suggest that in male patients the prevalence of depression increases with the severity of CHF symptoms. This was shown by both the BDI and the SCID-DES results suggesting that male NYHA 2 patients (0%) are not affected by depression but that male NYHA 3 patients are (20% - both BDI and SCID-DES). Although male NYHA 2 patients may not develop clinical depression as frequently as female NYHA 2 patients, male patients develop more symptoms of depression than women, independent of the severity of the CHF symptoms. However, this cannot be stated definitively with the results of this study in which only subjects in NYHA 2 and 3 classes are included.

Only four studies were found which reported the differences between male and female prevalence rates; therefore, a comparison between the prevalence rates of men and women with CHF and other cardiac disease or other chronic medical illness is limited. Hantz et al. (1994) conducted the only study reporting that all patients with Parkinson's disease diagnosed with MDE (2.7%) were women. The differences between male and female subjects with Parkinson's disease compare only to male and female NYHA 2 subjects where only the female subjects were identified with MDE.

Crowe et al. (1996) report no differences in male or female level of severity of MDE with respect to myocardial infarction severity and history of previous myocardial infarct severity and history of previous myocardial infarction, but no differences on the prevalence of MDE between men and women were reported. In

another study, Carney et al. (1993) report more female subjects were found depressed in a study that examined the relationship between psychiatric depression and ventricular arrhythmias, but the exact prevalence rates were not reported. Frasure-Smith et al. (1995) also indicate that higher BDI scores were reported by women than men with a recent myocardial infarction, but no other details were indicated.

Why female subjects in this study have a higher prevalence rate of MDE than male subjects does not have a clear explanation. In the general population as well, researchers are searching for an explanation about why more women than men appear to develop depression. Some researchers suggest that hormones, sleeping patterns, and social discrimination may predispose women to major depressive disorders (Leutwyler, 1997).

In this study, the demographic factors of age or level of education do not appear to influence the development of clinical depression. The average age of the clinically depressed male and female subjects is similar (70 years for female subjects, range of 58-81 years; 72 for male subjects, range of 71-73 years). Only two of the female subjects have a lower level of education (Grade 7 and 8) but two have high school education and one has a diploma in Nursing. The two male NYHA 3 subjects have post secondary education. With respect to marital status, three female NYHA 2 subjects are not married and are living alone; one is single and two are widows. The other two women and the two male NYHA 3 subjects are married.

The lack of social support for those individuals living alone may influence the development of depression.

Conclusions

Two conclusions are drawn from this section of the study.

1. Women with CHF, like women in the general population, are at greater risk of experiencing clinical depression than men.

2. The severity of CHF symptoms appears to influence the risk of experiencing clinical depression more so for men than for women.

## Optimal Method of Depression Assessment in Patients with CHF

The third objective of this study was to determine the optimal method of assessing depression in ambulatory patients with CHF. The concordance of the findings and methods of depression assessment are discussed. The advantages and disadvantages of the BDI and the SCID-DES are presented.

Concordance of Findings

There is 100% concordance of the findings of the BDI and SCID-DES in the assessment of an MDE in both female and male NYHA 2 subjects. The concordance is 50% for female NYHA 3 subjects and 33% for male NYHA 3 subjects. The overall concordance for all subjects is 70.75%.

The lower concordance of findings between the BDI and the SCID-DES was observed in those patients with more severe CHF symptoms. The severity of CHF symptoms may increase the possibility of the subject confusing the depressive symptoms with those of CHF. Considering this possibility, the disagreements between the two methods used in this study may be explained by some details of the clinical course of these subjects. The disagreements occurred in one female NYHA 3 subject (s-17) and in two male NYHA 3 subjects (s-16, s-21).

The only disagreement between the BDI and the SCID-DES in the assessment of an MDE in female subjects occurred with subject s-17. Although this subject reported seven of the non-somatic BDI symptoms with a score of 10, and two of the somatic BDI symptoms (sleep disturbance and fatigability) with a score of 3, she was rated as having no symptoms of MDE according to the *DSM-IV* criteria. This can be explained by the nature of the SCID which requires that the interviewer stop asking questions if neither depressed mood nor diminished interest or pleasure are identified. As well as being classified as NYHA 3, this subject also reported unstable CHF symptoms during the cardiovascular assessment.

Although the SCID-DES and an unstructured clinical interview conducted by a clinical psychologist did not find subject s-16 as having an MDE, this subject reported having 10 of the 16 non-somatic BDI symptoms for a score of 13, and 5 somatic BDI symptoms for a score of 8 (total BDI score of 21). This subject was suffering from a severe neuropathy in addition to NYHA 3 symptoms at the time of the assessment for this study, and the higher score on the BDI somatic symptoms

could have reflected symptom overlap. If the somatic symptoms of MDE were not considered for this subject, he still would be classified with "mild to moderate" depression at the time of the interview. The SCID-DES rating for this patient indicates that he had three out of five symptoms needed to be classified as having an MDE according to the *DSM-IV* criteria. Depressed mood and diminished interest or pleasure were two of the three symptoms rated, the other was fatigue or loss of energy. Inadequate information was available to rate the symptom about feelings of worthlessness, or excessive or inappropriate guilt. Because the rating strongly suggested that this subject was clinically depressed, he was referred to a clinical psychologist for further investigation. At the time of this assessment, a week after the original assessment, a clinical depression was not evident. This can be explained by previous knowledge from epidemiological studies about "the transient nature of depressive symptoms" (Davis & Jensen, 1988, p. 193). These researchers indicate that some symptoms of depression may be present at any given time in the population but may not be present when subjects are retested.

Subject s-21 was classified as having an MDE according to the *DSM-IV* criteria, but with only depressive symptoms according to the BDI. He reported having 4 of the 16 non-somatic BDI symptoms and 4 of the 5 somatic BDI symptoms with a total BDI score of 9, only 1 point from being classified with "mild to moderate" depression. He had been diagnosed with an MDE by his family doctor eight months prior to the interview. By the time of the study assessment, this patient had been on daily antidepressant medication for four months. This subject had

stopped taking the antidepressant on his own but started again because this medication helped him "to stop his morbid thoughts". This subject refused a referral to a clinical psychologist. As well as being classified as NYHA 3, this subject also reported unstable CHF symptoms during the cardiovascular assessment.

Depression Assessment Methods

The BDI and the SCID-DES were used in this study because of the concerns about depression and CHF somatic symptom overlap. Some researchers such as Bornstein et al. (1993) and Moller et al. (1994) discuss the advantage of, and support the use of several methods to assess MDE in patients with chronic medical illnesses.

Both the BDI and the SCID-DES are well developed instruments which have been used extensively in research to report the prevalence of MDE with a variety of populations, including several medical illness categories. The BDI was used for screening purposes to include the maximum number of subjects with an MDE, thus a lower cut-off score (13) was selected to minimize the prevalence of false-negative cases. As recommended by Davis and Jensen (1988), the SCID-DES was used in this study to ratify the BDI results and to correct for false-positive cases that could result with a lower BDI cut-off score. This decision was also supported by Yingling et al. (1993) who used the SCID "to support the validity of the screening measures" (p. 232) of the BDI. The use of the SCID in the assessment of MDE in patients with CHF is advantageous to determine whether or not higher BDI scores are influenced

by somatic symptoms of CHF. However, there are advantages and disadvantages of both instruments that need to be addressed.

Advantages and disadvantages of the BDI. The BDI is a self-report instrument widely used to assess depression in psychiatrically diagnosed patients and in normal populations. In addition, the BDI is one of the most commonly used measures of depression in medically ill patients (Rodin et al., 1991).

There are three major advantages of the BDI to assess depression in patients with CHF. First, the BDI not only identifies the presence or absence of depression, but also captures the overall severity of depression (Rodin et al., 1991). The 21 categories of symptoms, 16 non-somatic and 5 somatic symptoms, must be present for at least a week and contain four ranked statements describing a specific behavioral manifestation of depression, reflecting the range of severity of symptoms (Beck et al., 1961). The subject, prior to responding, is instructed to circle the number next to the statement which best describes the feeling for the past week, including the day of the assessment. The scale rates each symptom item with a score ranging from 0 (*absent)* to 3 (*severe*). The summation of scores reflects the overall severity of depression. Second, the BDI allows the examination of the relationship between somatic and non-somatic symptoms. The third advantage of the use of the BDI to assess depression in patients with CHF is that it is a relatively short and easily administered instrument with a solid psychometric base (Beck et al., 1988).

Two disadvantages of the BDI to assess depression in patients with CHF are identified. First, the exact cut-off score to be used with any particular population has

not been established. A high cut-off score may yield a high rate of false-negative diagnoses, and a low cut-off score may yield a high rate of false-positive diagnoses. A cut-off score of 13 was chosen for this study. Second, even though the BDI is a self-report instrument, the patient may not be able to complete the form independently. This may occur in situations when either the CHF symptoms and/or the depressive symptoms are more severe. As well, the patient may confuse the somatic symptoms of an MDE with those of CHF. The clinician should remain with the patient and provide the necessary assistance to ensure completion of the form.

Advantages and disadvantages of the SCID-DES. The main advantage of the SCID-DES in assessing depression in CHF patients relies on its high inter-rater reliability based on its standardized criteria. The standardized criteria exclude the somatic symptoms of depression that may be confused with CHF somatic symptoms.

The major disadvantage of the SCID-DES in assessing depression in patients with CHF is the inability of the SCID-DES to assess the severity of the symptoms of depression. With its screening method, the SCID-DES identifies the presence or absence of depression, but not the severity of the disease. The reason why the SCID-DES identified only two subjects with depressive symptoms may be attributed to the nature of the screening section of this instrument. Another disadvantage is attributed to the extensive training in the use of the SCID-DES that is required by the clinician and to the high level of inter-rater reliability that must be maintained.

Discussion

The lower concordance of findings between the BDI and the SCID-DES was observed in those NYHA 3 subjects with more severe CHF symptoms. As well, two of the three disagreements were among subjects with unstable CHF symptoms as identified during the cardiovascular assessment. The severity of CHF symptoms may cloud the assessment of depression in these patients because the depressive symptoms may be confused with symptoms of CHF. This corroborates the concerns of other researchers regarding somatic symptom overlap. The diagnosis of depression may be clouded in patients with unstable or more severe CHF symptoms regardless of the method used.

There is inconsistency in concordance agreement between the findings of the BDI and the SCID-DES of this study and other studies that used the same methods of assessment of MDE in patients with cardiac disease. For example, Davis and Jensen (1988) found a lower concordance agreement (13.46%) between the BDI and the SCID. However, Yingling et al. (1993) found a higher concordance agreement of 81.8% between the BDI and the SCID.

The non-somatic BDI items alone without the somatic BDI items could be used in the clinical setting in circumstances when patients with unstable CHF symptoms may easily confuse somatic symptoms of depression with somatic CHF symptoms. Caution is recommended because the elimination or replacement of the somatic symptom items in the assessment of depression in patients with CHF and other chronic illnesses may result in underdiagnosing depression in these patients.

Conclusions

Four conclusions are derived from this section of the study.

1. The assessment of clinical depression is more difficult when CHF symptoms are more severe or unstable. A differentiation between the somatic symptoms of CHF and depression is made possible by a cardiovascular assessment.

2. The BDI identifies the presence or absence of depression, and captures the overall severity of depressive symptoms. All depressive symptoms and depression severity are determined for each of the subjects.

3. The SCID-DES is a reliable interview guide for making the *DSM-IV* diagnosis of depression. This method can be used to ratify the BDI results and correct for false-positive cases, but requires extensive training and may not be readily usable by all clinicians. The SCID-DES identifies the presence or absence of depression but not the severity of the disease.

4. The use of the two instruments, the BDI and the SCID-DES, together provide the optimal method of assessment of depression in patients with CHF.

## Depressive Symptoms

The BDI captures the presence or absence, and the level of severity, of both somatic and non-somatic symptoms of depression. Because of this feature, analysis of depressive symptoms can be conducted on each subject. The somatic and non-somatic symptoms of depression of both clinically depressed and non-clinically depressed subjects are discussed in this section. Patterns of somatic and non-somatic

symptom scores of the subjects according to gender and NYHA classification are presented.

Clinically Depressed Subjects

The somatic symptom scores of female subjects range from three to six, and in male subjects range from three to eight. The non-somatic symptom scores in female subjects range from 10 to 19 and in male subjects range from 13 to 17. Total BDI scores range from 13 to 23, and in both female and male subjects, the non-somatic symptom scores outweigh the somatic symptom scores.

Several patterns of somatic and non-somatic symptoms reported by these subjects were identified. All clinically depressed female NYHA 2 and NYHA 3 subjects reported the somatic symptoms of sleep disturbance and fatigability but with differing levels of severity. No clinically depressed female NYHA subject reported experiencing loss of appetite, weight loss, or loss of libido, or all of the somatic symptoms. The two clinically depressed male NYHA 3 subjects reported fatigability, loss of appetite, and loss of libido, but with differing levels of severity. One male subject reported experiencing all the somatic symptoms. The three clinically depressed female NYHA 2 subjects reported experiencing the non-somatic symptoms of pessimism, lack of satisfaction, irritability, and work inhibition and had no self-punitive wishes, while the two clinically depressed female NYHA 3 subjects reported sense of failure, lack of satisfaction, self-accusations, indecisiveness, work inhibition, and no symptoms of self-punitive wishes, social withdrawal, or body

image concerns. Both male NYHA 3 subjects reported the non-somatic symptoms of mood, pessimism, lack of satisfaction, self-accusations, irritability, indecisiveness, body image, work inhibition, and somatic preoccupation symptoms, but with some variation in the degree of severity. Of note, all clinically depressed subjects reported lack of satisfaction and work inhibition, and only one of these subjects reported having thoughts about self-punitive wishes (or committing suicide).

Non-Clinically Depressed Subjects

Seven female NYHA 2 subjects, six female NYHA 3 subjects, eight male NYHA 2 subjects, and seven male NYHA 3 subjects reported depressive symptoms but had total BDI self-report scores of less than 13, the cut-off score for classification as clinically depressed. More male NYHA 2 subjects (80%) have depressive symptoms than male NYHA 3 subjects (70%). In addition, more female NYHA 2 subjects (70%) reported experiencing some depressive symptoms than female NYHA 3 subjects (60%). Although no male subject in the NYHA 2 class was identified as clinically depressed, more (80%) were found with symptoms of depression than female subjects in this category (70%). Sixty percent of female NYHA 3 subjects reported symptoms of depression compared to 70% of male NYHA 3 subjects.

The somatic symptom scores of the female subjects range from one to five, and in male subjects range from zero to five. The non-somatic symptom scores in female subjects range from 2 to 9, and in male subjects range from 0 to 11. The

total BDI scores range from 2 to 10 in the female subjects, and 1 to 11 in the male subjects. Non-somatic symptom scores outweigh somatic symptom scores in all but one of the female NYHA 2 subjects, and in three of the six female NYHA 3 subjects. In male subjects, the non-somatic symptom scores outweigh somatic symptom scores in all but one male NYHA 2 subject and one male NYHA 3 subject. It is important to note that two male subjects, one NYHA 2 (s-13) and one NYHA 3 (s-23), scored 11 points in the non-somatic symptoms of depression in the BDI. These subjects may be at higher risk for developing depression in the future, therefore follow-up should be provided.

Several patterns of the somatic and non-somatic BDI symptoms reported by these subjects were identified. No female subject reported weight loss, and no female NYHA 2 subject reported loss of libido. No female subject reported the non-somatic symptoms of self-punitive wishes and indecisiveness, and no female NYHA 3 subject reported experiencing sense of failure, guilty feelings, sense of punishment, self-accusations, social withdrawal, and body image concerns. No male subject reported the somatic symptom of weight loss, and no male NYHA 2 subject reported loss of appetite. No male subject reported the non-somatic symptoms of sense of punishment and self-punitive wishes, no male NYHA 2 subject reported guilty feelings and body image concerns, and no male NYHA 3 subject reported pessimism, crying spells, and social withdrawal.

Discussion

Depression in patients with CHF, and in patients with many other chronic illnesses, may be difficult to assess accurately due to the similarity in somatic symptoms. The somatic symptoms of depression such as sleep disturbance, fatigability, loss of appetite, weight loss, and loss of libido can be confused by similar symptoms of CHF. Some researchers who use self-reports instruments to assess depression in medically ill patients find that psychological symptoms are more useful than somatic ones to differentiate depression in patients with chronic medical conditions. In addition, researchers find a relationship between the severity of the medical condition and the severity of depression, expecting elevated scores of depression in more severe medical conditions (Rodin et al., 1991). While Davis and Jensen (1988) suggest that the somatic symptoms of the BDI be included only if the symptoms are severe and unrelated to the medical illness, the elimination or replacement of the somatic symptom items in the assessment of depression in patients with CHF and other chronic illnesses may result in underdiagnosing depression in these patients.

The common physical or somatic symptoms of CHF include fatigability, insomnia, weight loss, and loss of appetite. These symptoms are chronic and a patient may experience the same symptoms for weeks, months or years. While these symptoms vary in severity with each patient, the degree of cardiovascular disability may be categorized with the NYHA classification system.

In patients with CHF, somatic symptoms are a consequence of the inability of the ventricles to discharge its content and/or pooling of blood behind one or both ventricles (Braunwald, 1988). When a previously stable patient becomes decompensated, some of the somatic symptoms may be exacerbated while other clinical manifestations of CHF such as increase in fluid in the interstitial spaces of the lungs, liver, subcutaneous tissues, and serous cavities are also evident. A systematic, thorough clinical assessment which includes the NYHA classification, assists the clinician to determine whether or not the patient's symptoms of CHF are stable. If the CHF symptoms are unstable, it may be more difficult to accurately assess a depressive state as the patient may be reacting to changes in CHF symptomatology which may or may not be long standing.

Depressive disorders involve disturbances in emotional, cognitive, behavioral, and somatic regulation (U.S. Department of Health and Human Services, 1993). Somatic symptoms of an MDE such as fatigue and insomnia are accompanied by severe disturbances in cognition such as difficulty in concentrating and the inability to make decisions, and disturbances in behaviour such as loss of interest in other people and isolation. These symptoms may develop suddenly, over days, or perhaps weeks, and may last for a week, two weeks, or up to six months or longer if untreated (*DSM-IV*, 1994).

The potential for symptom overlap in the diagnosis of MDE in patients with chronic illness has been of concern to researchers. The effective diagnosis of MDE is often clouded because depressive symptoms are often mingled with symptoms of

the chronic medical illness (Stenn, 1996). The BDI is a good method to assess MDE in patients with CHF because of the 16 non-somatic symptoms along with the 5 somatic symptoms. In this study, both female and male subjects identified with clinical depression by the BDI reported higher scores in the non-somatic symptoms. If the somatic symptoms were not considered in all of these subjects, the total BDI score of only one female NYHA 3 subject (s-17) would be reduced to below the BDI cut-off score of 13. The level of depression severity would change from "moderate to severe" to "mild to moderate" for one female NYHA 2 subject (s-3) and for the two male NYHA 3 subjects (s-16 and s-29).

Patterns of symptoms reported by subjects identified with clinical depression are also important to consider in the clinical setting. All female and male subjects reported fatigability, one of the somatic symptoms of depression that may be confused by patients with CHF and clinicians alike. Further thorough investigation by the clinician is required when patients with CHF continue to complain of fatigue when other CHF symptoms are stable. When sleep disturbance is reported frequently by female patients, the clinician should explore the possibility of clinical depression in these patients. Although loss of libido is frequently reported by male patients with CHF, it may also indicate the presence of clinical depression in these subjects. Further investigation to rule out the latter is necessary.

Both male and female subjects seem to be affected by the non-somatic symptom of work inhibition. Although CHF symptoms may prevent patients from working, the lack of interest in participating in working activities should cue the

clinician about the possibility of clinical depression. The presence of other non-somatic symptoms of depression in female patients such as lack of satisfaction, and in males such as mood, pessimism, self-accusations, irritability, indecisiveness, body image, and somatic preoccupation should prompt the clinician to investigate further for clinical depression.

The BDI results of this study suggest that the symptoms of MDE reported by ambulatory patients with CHF are more accurate and may not reflect somatic symptoms of CHF in contrast with other researchers. For instance, Davis and Jensen (1988) argue that the higher BDI scores in their study are the result of patients interpreting cardiac somatic symptoms such as fatigue and insomnia as depressive symptoms, and Bornstein et al. (1993) argue that higher BDI scores result from patients confusing neurobehavioral changes with somatic symptoms of MDE.

Conclusions

Three conclusions are derived from this section.

1. Non-somatic BDI symptoms of depression outweigh somatic BDI symptoms in subjects identified with clinical depression. Even when the somatic symptoms are not considered, these subjects are still classified as having clinical depression.

2. The somatic symptoms of depression and CHF can be differentiated by performing a cardiovascular clinical assessment, which includes the NYHA classification, prior to the depression assessment.

3. The BDI could be used alone to assess depression in patients with CHF when the clinician is aware of the differences between the somatic symptoms of depression and somatic symptoms of CHF.

## Strengths of the Study

Four aspects of the methodology used to assess depression in subjects with CHF contribute to the strengths of this study.

First, female and male subjects were randomly selected from the population of patients that met the inclusion criteria. Demographic bias was avoided with the exception of language and residence (patients who did not understand and read English and who did not live in the Edmonton vicinity were excluded).

Second, this study included male and female subjects with NYHA 2 and NYHA 3 symptoms of CHF. The overall MDE prevalence rates and severity of female and male subjects were compared, as well as female NYHA 2 subjects with female NYHA 3 subjects, female NYHA 2 subjects with male NYHA 2 subjects, female NYHA 3 subjects with male NYHA 3 subjects, and male NYHA 2 subjects with male NYHA 3 subjects.

Third, because of the awareness of the potential somatic symptom overlap between CHF and an MDE, a cardiovascular assessment was conducted on all subjects in order to confirm the NYHA classification. This assessment allowed for a differentiation of somatic CHF symptoms with those of MDE.

Fourth, this study used the BDI and the SCID-DES for the depression assessment of male and female ambulatory patients with CHF. Both instruments provided a structured, consistent method of assessment and were used as planned. A cut-off score of 13 was used with the BDI to minimize false-negative cases. False-positive cases were not maximized as demonstrated with the results of the SCID-DES. Only one subject (s-17) of those identified as clinically depressed by the BDI had the minimum cut-off score of 13.

## Limitations

There are two major limitations to this study: sample size and characteristics, and scope of the study.

### Sample Size and Characteristics

The sample size was small. Consequently, it remains to be seen whether or not the results of this study are representative of the whole population of patients with CHF. Because of the small number of ambulatory CHF patients in NYHA classes 1 and 4 attending the Heart Function Clinic, only ambulatory male and female patients with CHF in NYHA classes 2 and 3 were included in this study. The original plan was to include five male and five female subjects randomly selected from each of the NYHA classification groups. Therefore, this study leaves important unanswered questions such as "What is the prevalence and severity of depression in ambulatory female and male patients in the NYHA 1 and 4 classification groups?"

and "Does the prevalence of depression in male and female patients increase with the severity of CHF symptoms?"

Scope of the Study

The effect of social factors such as economics and support systems on the development of depression in patients with CHF was not addressed in this study.

Other important questions that were not addressed were "What are the complications of depression in ambulatory patients with CHF? Does it increase mortality? Does it decrease adherence to prescribed medications and motivation to participate in rehabilitation programs?"

Reference to the risk factors of depression that may exacerbate the occurrence of depression in patients with CHF, other than those related to gender, was not made. Risk factors such as history of depressive illness in first-degree relatives, prior episodes of MDE, stressful life events, lack of social support, and psychoactive substance dependence, were not explored.

## Implications for Clinical Practice

Awareness of the high prevalence rate of depression in ambulatory patients with CHF has implications for clinicians working with these patients. The presence of an MDE has been associated with increased mortality in patients with cardiac disease, not only from suicide but also from ventricular tachycardia (Carney et al., 1993) and ventricular arrhythmias (Frasure-Smith et al., 1995), and low compliance

to taking prescribed medications (Carney et al., 1995). This may also explain the high mortality rate (50%) in patients with CHF (Freedland et al., 1991) over a year.

In addition, the impairment of depression causes some interference in social and occupational functioning (Reesal & Vincent, 1992) resulting in poorer intimate relationships and less satisfying social interactions (U.S. Department of Health & Human Services, 1993), and loss of work time (Wells et al., 1989; Schleifer et al., 1989).

In patients post stroke, the presence of an MDE causes diminished motivation to participate in rehabilitation programs, prolonging the recovery (Rodin et al., 1991) and in patients with cancer affects adaptation to pain and treatment and stimulates tumour proliferation (Spiegel, 1996). Although these questions were not addressed in this study, it is expected that ambulatory patients with CHF may present with similar complications when suffering with an MDE. The assessment and treatment of MDE in ambulatory patients with CHF may prevent several of these complications and decrease mortality and morbidity.

Assessment of depression in ambulatory patients with CHF may be difficult because of somatic symptom overlap. However, health care clinicians, including nurses, can assess these patients accurately despite this limitation. The diagnosis of depression will assist the clinician to provide appropriate care and treatment for both depression and CHF, neither minimizing or overestimating the degree or severity of each disease. With appropriate treatment for each disease, the risk of further complications in these patients is reduced. The assessment of depression in

ambulatory patients with CHF, using the SCID-DES and the BDI, can be done by nurse clinicians after being trained in the use of the instruments.

Although the use of the SCID-DES and the BDI together may be the best procedure to assess depression in ambulatory patients with CHF, not all nurse clinicians have access or the opportunity to be trained in the use of the SCID. Nurse clinicians without training in the SCID procedure should use the BDI to assess depression in ambulatory patients with CHF whenever the presence of the mood disorder is suspected, and follow the procedure outlined in this study. If the patient is identified with a depression or with several depressive symptoms, a referral should be made to an appropriate health care clinician, such as a clinical psychologist, for further assessment and if necessary, appropriate treatment and follow-up.

## Future Research

A similar study involving a larger number of subjects from each of the NYHA classes is recommended to address the questions presented in this study. What is the prevalence and severity of depression in ambulatory female and male NYHA 1 and NYHA 4 patients? Does the prevalence of depression in male and female patients increase with the severity of CHF symptoms?

Future studies are needed to address social issues that may predispose the development of clinical depression in women with CHF. For example, does being single or widowed increase the risk of clinical depression in women with CHF?

Does the presence or absence of a support system, or do economic factors play a role in the development of clinical depression in this population of women? Appropriate interventions should be implemented and followed by further assessment to evaluate the clinical outcome of women with CHF and clinical depression.

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## Appendix A

## NEW YORK HEART ASSOCIATION FUNCTIONAL CLASSIFICATION SYSTEM

Class 1: Patients with cardiac disease but without resulting limitation of physical activity. Ordinary physical activity does not cause undue fatigue or shortness of breath.

Class 2: Patients with cardiac disease resulting in limitation of physical activity. They are comfortable at rest. Ordinary physical activity causes fatigue or shortness of breath.

Class 3: Patients with cardiac disease resulting in marked limitation of activity. They are comfortable at rest. Less than ordinary activity causes fatigue or shortness of breath.

Class 4: Patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of cardiac insufficiency are present even at rest. If any physical activity is undertaken, symptoms are exacerbated.

Note. This material has been adapted for use in clinical practice at the Heart Function Clinic at the University of Alberta Hospital.

Reference: Criteria Committee, New York Heart Association, Inc. (1964), cited in Braunwald (1988).

# Appendix B

## HEART FUNCTION CLINIC FLOW CHART

CEF ETIOLOGY

Name

LVEF
Method
Date

| Date | B/P | HR | H.S. | Chest | EAmss | EJR | EPM | SOB | Fatigue | Stairs | Blocks | PND | Pillows | Weight | NYHA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | S3<br>S4<br>Mur | Clear<br>Rales<br>Whz | JVD | | | Ex<br>Rest | Ex<br>Rest | | | | | | |

Hospitalizations since last visit: NO YES Admission Date Discharge Date Diagnosis

Comments

RTC
Teaching Tests Requested
Fluid Restriction Salt Restriction Daily Weights Medications Exercise and Rest

| Date | B/P | HR | H.S. | Chest | EAmss | EJR | EPM | SOB | Fatigue | Stairs | Blocks | PND | Pillows | Weight | NYHA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | S3<br>S4<br>Mur | Clear<br>Rales<br>Whz | JVD | | | Ex<br>Rest | Ex<br>Rest | | | | | | |

Hospitalizations since last visit: NO YES Admission Date Discharge Date Diagnosis

Comments

RTC
Teaching Tests Requested
Fluid Restriction Salt Restriction Daily Weights Medications Exercise and Rest

HPM = hepatomegaly
HJR = hepatojugular reflux

HFC FLOW CHART
University of Alberta Hospitals

| Date Start | CARDIAC Medications | Date | Date | Phone follow up |
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# APPENDIX C

## STRUCTURED CLINICAL INTERVIEW FOR THE DSM-IV

***Rating Code:*** *?=inadequate information; 1=absent or false; 2=subthreshold; 3=threshold or true*

**CURRENT MAJOR DEPRESSIVE EPISODE**

**Mrs/Mr.....Now I am going to ask you some questions about your mood:**

*MDE CRITERIA Five (or more) of the following symptoms have been present during the same two-week period and represent a change from previous functioning; at least one of the symptoms is either **(1) depressed mood, or (2) loss of interest or pleasure**.*

**In the last month...**

1. ...has there been a period of time when you were feeling **depressed or down** most of the day nearly every day? (What was that like?) ? 1 2 3

**IF YES:** How long did it last? (As long as two weeks?)

*MDE CRITERIA (1) Depressed mood most of the day, nearly every day, as indicated either by subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful):*

2. ...what about **losing interest or pleasure** in things you usually enjoyed? ? 1 2 3

**IF YES**: Was it nearly every day? How long did it last? (As long as two weeks?)

*MDE CRITERIA (2) Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated either by subjective account or observation made by others).*

**If neither item (1) nor item (2) is coded "3", go to PAST MAJOR DEPRESSIVE EPISODE**

**NOTE: When rating the following items, code "1" if clearly due to a general medical condition, or to mood-incongruent delusions or hallucinations**

**For the following questions, focus on the worst two weeks in the past month (or else the past two weeks if equally depressed for the entire month)**

**During this (two-week period)...**

**3. ...did you lose or gain any weight?** **? 1 2 3**
(How much?) (Were you trying to lose weight?)

**IF NO:** How was your appetite? (What about compared to your usual appetite?) (Did you have to force yourself to eat?) (Eat [less/more] than usual?) (Was that nearly every day?)

Check if:
_____ weight loss or decreased appetite
_____ weight gain or increased appetite

*MDE CRITERIA (3) Significant weight loss or weight gain when not dieting (e.g., a change of more than 5% of body weight in a month) or decrease or increase in appetite nearly every day.*

**4. ...how were you sleeping?** **? 1 2 3**
(Trouble falling sleep, waking frequently, trouble staying asleep, waking too early, OR sleeping too much? How many hours a night compared to usual? Was that nearly every night?)

Check if:
_____ insomnia
_____ hypersomnia

*MDE CRITERIA (4) Insomnia or hypersomnia nearly every day*

**5. ...were you so fidgety or restless that you** **? 1 2 3**
were unable to sit still? (Was it so bad that other people noticed it? What did they notice? Was that nearly every day?)

**IF NO:** What about the opposite--**talking or moving slowly** than is normal for you? (Was it so bad that other people noticed it? What did they notice? Was that nearly every day?)

Check if:
_____ psychomotor retardation
_____ psychomotor agitation

**NOTE: Also consider behaviour during the interview**

*MDE CRITERIA (5) Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)*

**6. ...**what was your **energy** like? **? 1 2 3**
(Tired all the time? Nearly every day?)

*MDE CRITERIA (6) Fatigue or loss of energy nearly every day.*

**During this time...**

**7.** ... how did you **feel about yourself?** **? 1 2 3**
(Worthless?) (Nearly every day?)

**IF NO:** What about feeling guilty about things you had done or not done? (Nearly every day?)

Check if:
_____ worthlessness
_____ inappropriate guilt

**NOTE: Code "1" or "2" if only low self-esteem**

*MDE CRITERIA (7) Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)*

**8.** ... did you have trouble **thinking or concentrating?** **? 1 2 3**
(What kinds of things did it interfere with?) (Nearly every day?)

**IF NO:** Was it hard to make decisions about everyday things? (Nearly every day?)

Check if:
_____ diminished ability to think
_____ indecisiveness

*MDE CRITERIA (8) Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)*

**9.** ...were things so bad that you were thinking **? 1 2 3**
**a lot about death** or that you would be better off dead? What about thinking of hurting yourself?

**IF YES:** Did you do anything to hurt yourself?

Check if:
_____ thoughts of own death
_____ suicidal ideation
_____ specific plan
_____ suicide attempt

**NOTE: Code "1" for self-mutilation w/o suicidal intent**

*MDE CRITERIA (9) Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide*

**At least five of the above symptoms (1-9) are coded "3" and at least one of these is item (1) or (2). If NO: go to PAST MAJOR DEPRESSIVE EPISODE.**

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**PAST MAJOR DEPRESSIVE EPISODE**

*MDE CRITERIA Five or more of the following symptoms have been present during the same two-week period and represent a change from previous functioning; at least one of the symptoms was either (1) depressed mood, or (2) loss of interest or pleasure.*

**1. If not currently depressed:**
Have you **ever** had a period when you were **?** **1** **2** **3**
feeling **depressed or down** most of the day nearly every day? (What was that like?)

**If currently depressed but full criteria are not met, screen for Past MDE:**
Has there ever been **another** time when you were **?** **1** **2** **3**
**depressed or down** most of the day nearly every day? (What was that like?).
**IF YES:** When was that? How long did it last? (As long as two weeks?)

*MDE CRITERIA (1) Depressed mood most of the day, nearly every day, as indicated either by subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful).*

**2. If past depressed mood:**
During that time, did you **lose interest or pleasure** **?** **1** **2** **3**
in things you usually enjoyed? (What was that like?)

**If NO past depressed mood:**
What about a time when you **lost interest or pleasure** ? 1 2 3
in things you usually enjoyed? (What was that like?)

**IF YES:** When was that? Was it nearly every day? How long did it last? (As long as two weeks?)

*MDE CRITERIA (2) Markedly diminished interest or pleasure in all or almost all, activities most the day, nearly every day (as indicated either by subjective account or observation made by others)*

**Have you had more than one time like that?** (Which time was **the worst?**)

**IF UNCLEAR:** Have you had any times like that in the past year?

**NOTE: If more than one past episode is likely, select the "worst" one for your inquiry about a past major depressive episode. However, if there was an episode in the past year, ask about that episode even if it was not the worst.**

**For the following questions, focus on the worst two weeks of the past major depressive episode that you are inquiring about**

**NOTE: When rating the following items, code "1" if clearly directly due to a general medical condition, or to mood-incongruent delusions or hallucinations**

**During that (two-week period)...**

**3.** ...did you **lose or gain any weight?** ? 1 2 3
(How much?) (Were you trying to lose weight?)

**IF NO:** How was your appetite? (What about compared to your usual appetite?) (Did you have to force yourself to eat?) (Eat [less/more] than usual?) (Was that nearly every day?)

Check if:
_____ weight loss or decreased appetite
_____ weight gain or increased appetite

*MDE CRITERIA (3) Significant weight loss or weight gain when not dieting (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.*

**4.** How were **you sleeping?** ? 1 2 3
(Trouble falling asleep, waking frequently, trouble staying asleep, waking too early, OR sleeping too much? How many hours a night compared to usual? Was that nearly every night?)

*MDE CRITERIA (4) Insomnia or hypersomnia nearly every day*

**5.** Were you so **fidgety or restless** that you were unable to sit still? (Was it so bad that other people noticed it? What did they notice? Was that nearly every day?) **? 1 2 3**

**IF NO:** What about the opposite -- talking or moving more slowly than is normal for you? (Was it so bad that other people noticed it? What did they notice? Was that nearly every day?)

Check if:
_____ psychomotor agitation
_____ psychomotor retardation

*MDE CRITERIA (5) Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).*

**6.** What was your **energy** like? (Tired all the time? Nearly every day?) **? 1 2 3**

*MDE CRITERIA (6) Fatigue or loss of energy nearly every day*

**During that time...**

**7.** ...how did you **feel about yourself?** (Worthless?) (Nearly every day?) **? 1 2 3**

**IF NO:** What about feeling guilty about things you had done or not done. (Nearly every day?)

Check if:
_____ worthlessness
_____ inappropriate guilt

*MDE CRITERIA (7) Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)*

**8.** ...did you have **trouble thinking or concentrating?** (What kinds of things did interfere with?) (Nearly every day?) **? 1 2 3**

**IF NO:** Was it hard to make decisions about everyday things? (Nearly every day?)

Check if:
_____ diminished ability to think
_____ indecisiveness

*MDE CRITERIA (8) Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)*

**9.** ...were things so bad that you were thinking **? 1 2 3**
**a lot about death** or that you would be **better off dead?** What about thinking of hurting yourself?

**IF YES:** Did you do anything to hurt yourself?

Check if:
_____ thoughts of own death
_____ suicidal ideation
_____ specific plan
_____ suicide attempt

**NOTE: Code "1" for self-mutilation w/o suicidal intent**

*MDE CRITERIA (9) Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide*

**If not already asked:** Has there been any other time when you were **(depressed/own words)** and had even more of the symptoms that I just asked you about?

**IF YES:** Return to **Past Major Depressive Episode**

Did this begin soon after someone close to you died? **? 1 2 3**

*MDE CRITERIA Not better accounted for by [Simple] Bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterized by marked functional impairment morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms or psychomotor retardation.*

How old were you when (Past Major Depressive Episode) started? _____

*MDE CRITERIA Age at onset of Past Major Depressive Episode coded above*

How many separate times in your life have you been (depressed/own words) nearly every day for at least two weeks and had several of the symptoms that you described like (symptoms of worst episode)? _____

*MDE CRITERIA Total number of Major Depressive Episodes (Code 99 if too numerous or indistinct to count)*

Adapted from:

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1996). *Structured Clinical Interview for DSM-IV Axis I Disorders - Patient Edition (SCID-I/P, Version 2.0)*. New York: Biometrics Research Department, New York State Psychiatric Institute.

# APPENDIX D

## COPYRIGHT PERMISSION

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April 28, 1997

Ms. Rosa Gutierrez
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CANADA

Dear Ms. Gutierrez:

Your letter of April 15, 1997, to Ms. Martina VanDeVelde, requesting permission to use the *BDI* in the appendix to your thesis, was referred to our office for disposition. We are unable to honor your request to include the *BDI* in its entirety.

Please understand that as a responsible test publisher, we believe it is our duty to protect the security and integrity of our test instruments. Therefore, we cannot allow copies of the test to be included with or stapled to your thesis; however, you may use two actual test items from the *BDI* in your work. Please be sure the copyright notice appears with the items.

Thank you for your interest in our test materials.

Sincerely,

Linda Murphy

Linda Murphy
Rights and Permissions Specialist
Legal Affairs

# APPENDIX E

## CONSENT FORM

TITLE: Assessing Depression in Patients with Congestive Heart Failure.

RESEARCHER: Rosa Gutierrez, RN, BSc.
Master of Nursing (Candidate)
Faculty of Nursing, University of Alberta

SUPERVISOR: Dr. Terry Davis, RN, PhD
Faculty of Nursing, University of Alberta

### PURPOSE OF THE STUDY

Some patients with congestive heart failure develop depression. Depression may prevent these patients from participating in their own care.

The purpose of this study is:

To identify the best way of assessing depression in patients attending the Heart Function Clinic at the University of Alberta Hospital.

### PROCEDURES

Being in this study involves three activities. These activities will take 1 hour of your time.

(1) We will meet you in the Heart Function Clinic. Meeting times are between 3 p.m. and 6 p.m., from Monday to Friday.

(2) We will do a brief physical assessment.

(3) We will ask you questions about depression.

You may also be one of six patients chosen to be in second interview. A nurse-psychologist (Dr. Terry Davis) will conduct the second interview in her office. She will contact you by telephone to set a time for the interview. The interview will take about 30 minutes of your time. Dr. Terry Davis will ask you to describe how you have been thinking and feeling. We will compare Dr. Davis' interview findings with results of the questionnaires to check accuracy of procedures.

VOLUNTARY PARTICIPATION

Being in the study is your choice. You may not directly benefit. The results of the study will help nurses to give better care for patients.

Being in the study is risk free. You may be in need of medical or emotional attention during the study. In that event, we will refer you to suitable medical services right away.

Even after you enter the study, you may refuse to answer any questions during the study. You may withdraw from the study at any point in time. You can withdraw by telling the nurse researcher's secretary of your wish (492-1043). Taking part in this study or dropping out will not affect your care in the Heart Function Clinic.

We will keep information collected during the study in a locked cabinet for seven years. After seven years, the researcher will destroy this information. Only a code number will appear on any form or question sheets. We will store consent forms separate from the questionnaires. We will keep all consents for a least five years.

We may use information collected in this study in future studies. We will get permission before using it in other studies.

We may report findings from this study in published material or conferences. We will not use any information that may identify you in any report.

If you have questions about this study later, you can contact the researcher by telephone (492-8157).

CONSENT

The researcher has described the study to me. The researcher answered all my questions about the study to my satisfaction. I can contact the researcher (492-8157) if I have more questions. I understand the possible benefits and risks of joining the study. I understand the researcher will keep personal information about me confidential. I understand that I am free to drop out of the study whenever I wish without affecting my health care.

The researcher has given me a copy of this form to keep.

Signature (participant) _____ Date: _____

Signature (researcher) _____ Date: _____

# APPENDIX F

## ETHICAL APPROVAL

University of Alberta
Edmonton
Canada T6G 2G3

Faculty of Nursing
3rd Floor Clinical Sciences Building

**Certification of Ethical Acceptability for Research Involving Human Subjects**

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**NAME OF APPLICANT(S):** Rosa Gutierrez, RN, B.Sc., MN Candidate

**TITLE OF PROJECT:** "Assessing Depression and Explanatory Style in Ambulatory Patients with Cognitive Heart Failure"

---

The members of the review committee, having examined the application for the above named project, consider the procedures, as outlined by the applicants, to be acceptable on ethical grounds for research involving human subjects.

Oct 30/1995
Date

Janice Lander, PhD
Chair, Ethics Review Committee

ERC95-042
5005-02-058